BINDING PROMETHEUS: REGULATING REFUSALS TO LICENSE DIGITAL COPYRIGHT CONTENT UNDER THE SINGAPORE COMPETITION ACT 2004

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A THESIS SUBMITTED

FOR THE DEGREE OF MASTER OF LAW

DEPARTMENT OF LAW

NATIONAL UNIVERSITY OF SINGAPORE

2005

PREFACE

According to Greek mythology, Zeus, king of the gods had intended for Man to live without consciousness, believing that knowledge would only bring misery upon them. Driven by pity, the Titan Prometheus stole divine fire from Zeus, and unleashed a flood of inventiveness, creativity and culture on the Earth. Realising Prometheus' treachery, Zeus had him shackled to the side of a crag. Each day, Zeus would send an eagle to tear at the Titan's flesh and devour his liver. Each night, the wounds would heal so that Prometheus could be tormented once more.[1]

Like Prometheus, large corporations who own copyright content are responsible for much of the technological innovation that occurs in digital markets. Yet the recent cases in North America and Europe suggest that they are also attractive targets for allegations of anticompetitive abuses of their market power. Whenever a copyright owner is alleged to have refused to license its content, two regimes are primed for collision. On one hand, copyright law requires the integrity of a state-granted monopoly to be protected by giving owners the prerogative to deal as they please. On the other, competition law demands derogation through compulsory access to further its goals that may not be consistent with copyright policy. The principal challenge lies in developing a coherent framework to determine when and how intervention should occur.

[1] Aeschylus, *et al*, *Prometheus Bound: Greek Tragedy in New Translations* (Oxford: Oxford University Press, 1989)

Recent developments at the Faculty of Law at the National University of Singapore have provided a timely reminder that the law coexists in an ecosystem with other disciplines. Two double-degrees with the economics and business administration departments now complement the traditional four-year LLB program. This may well reflect the multidisciplinary competence those researching and practicing law here will eventually be expected to possess if they are to remain competitive. In this spirit, while the focus of this dissertation rests firmly upon the laws of Singapore, North America and the European Union, it incorporates microeconomic analysis integral to understanding digital copyright markets.

With the needs of the busy reader in mind, I aim to make this complex debate as comprehensive as possible, whilst scattering suggestions throughout. Like allegorical seeds, some will doubtlessly fall on stony ground, but others may be expected, if nurtured, to flourish. The reader may find the discussion demanding at various points. If so, explanations for unfamiliar economic or technological concepts may be found either in the footnotes accompanying the discussion, or Appendices at the end of this work. Indeed, more than half of the 81, 702 words that fill these covers are found in there - only the barest, most essential ideas are included in the main text. The implications of economic models have been stated in words and diagrams, rather than mathematical equations, as is normally the case. Finally, graphical representations are meant only to be illustrative and are not a necessary condition to follow the discussion.

The pleasure of thanking those who have helped the writing process is a sweet one. Mention must be first made of my supervisors: Dr. Robert Ian McEwin and Associate Professor Ng-Loy Wee Loon, to whom my greatest debt of gratitude is owed. Both of them carefully read every draft, eliminating substantive and typographical errors, and providing many insightful comments along the way. Were I to identify all their ideas, both their names would appear frequently. I assume that by commenting, they have consented to my fair use of their ideas, which intermingle with my own. Naturally, any errors that remain are my responsibility alone.

This paper would also not have been possible without the following people, who have individually and collectively inspired me along the path of IP scholarship with thoughtful debate and personal encouragement: Professor Jan Rosén, Lars Pehrson and Dr. Dan Eklöf of Stockholm University, Associate Professors Daniel Seng, Terry Kaan, Ng Siew Kuan, Joel Lee, Yeo Tiong Min, Teo Keang Sood, Victor Ramraj, Margaret Fordham and Barry Crown of the National University of Singapore, Professor George Wei of Singapore Management University, Mr Bryan Chew, Deputy Director, Ministry of Law, Singapore, Mr. Kow Keng Siong, District Judge, of the Subordinate Courts of Singapore, Mr. Sun Haochen of Harvard University, Professor Hugh Hansen of Fordham University, and not least, Professor Gerald Dworkin, Emeritus Professor at King's College, University of London.

Economic theory teaches that the price one pays should reflect its market worth. In this regard, I have been very blessed to have received a scholarship from

the IP Academy of Singapore. The Academy had also kindly supported me in attending several conferences relevant to this dissertation. The patient and enthusiastic assistance of members of the Academy's staff, particularly Mrs. Charlotte Gill-Tan, should also be acknowledged. It can only be hoped that the net present value of this work represents a fair return on their investment.

Finally, a dissertation is always written at the expense of those close to the author. I thank them for their resigned but gracious tolerance. Special mention should be made of my mother, who worked hard at proofreading my drafts at the expense of more interesting endeavours in the little free time available to her.

The law is described as it appeared to me in December 2004.

DARYL LIM
July 2005
Singapore.
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Yunnan

Fig.1: An allegorical depiction of the evisceration of creativity by unjustifiably harsh competition regulation in digital copyright markets.
Source: Peter Paul Reubens, *Prometheus Bound*. 1611-2, completed by 1618. Oil on canvas, 243 x 210 cm. Property of the Philadelphia Museum of Art

For my grandmother, Toi Pui San
(1928 –2005)
I am most grateful, mama, not for your priceless truths and selfless love; but in knowing that your last decision was the best one that anyone on this side of eternity can ever make.

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Summary

Competition rules regulating access to digital copyright content in the US and EU have largely been misdirected or incomplete. This has resulted in complex, sometimes conflicting, rules governing refusals to license, and may stem from insufficient appreciation of the fundamental legal and economic issues involved. In a world where intellectual property serves as one of the sources of greatest value, a finely tuned competition policy is more important than ever before. This dissertation therefore aims to formulate salient guidelines for applying the Singapore Competition Act 2004 to digital markets.

Copyright as it presently exists in the digital realm has distorted the utilitarian balance. Overbroad copyright risks retarding innovation, particularly in digital markets where innovation is interdependent on interoperability and access to copyright content. No measure at present seems capable of addressing anticompetitive abuses by copyright owners endogenously within the copyright regime. This may have caused copyright abuses to fall within the purview of competition law.

Section 47 of the Competition Act prohibits the dominant copyright owner from abusing its rights. However, "dominance" and "abuse" are arbitrary concepts that have been made more uncertain by broad textured legislation. The flexibility offered to those interpreting key terms that determine liability has sometimes caused a divergence in approaches based on the particular economic goals and legal analytical framework chosen.

From a legal perspective, the law sometimes fails to appreciate the nature of the grant under copyright law and tends to over or under-compensate the owner at the expense of encouraging further creative works. Analogies to real property rights are inappropriate. Digital copyright is susceptible to free riding, and owners should be more justified in refusing access. The extent of this justification turns on the scope of the copyright grant. By explicitly taking into account the owner's statutory rights, analysis will be more principled and conceptually certain. Analysis should also include an express weighing of the socio-economic costs and benefits in the refusal in order for proper calibration of copyright immutability.

From an economic perspective, the law sometimes gives insufficient attention to gains from dynamic efficiency. Concerns about preserving SMEs reflect pious socio-political aspirations based on inconclusive evidence, rather than more readily identifiable economic targets. Similarly, focusing on price and output gains of static efficiency neglects the greater benefits which technological progress brings. Any failure of market discipline on prices and output is only temporary. Even on a long-run view of markets that acknowledges the need for appropriation by IP owners and continual control over access to their content is taken, the law may still fail to appreciate the economics of network effects.

Ultimately, rivals should be encouraged to independently innovate and develop new and better copyright content where possible, rather than relying on compulsory access as a crutch to compete. How the law develops in Singapore will have a substantial bearing on her national economy. Countries with legal

systems able to deliver quick, sound and binding answers to tough questions like these will likely take the baton in world trade.

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INTRODUCTION

I. GENERAL INTRODUCTION: THE REASON FOR, AND SCOPE OF, THIS WORK

The sower may mistake and sow his peas
crookedly;
The peas make no mistake, but come up and show his line.

Ralph Waldo Emerson[2]

The theory that the law can identify and prohibit harmful business practices is probably the single most important, yet underdeveloped, idea in competition policy today.[3] As a tool of competition policy, competition law regulates a myriad of sectors in the economy. Of these sectors, those involving intellectual property rights (IPRs) [4], particularly in digital markets, [5] have recently galvanised considerable public interest.[6] The development of competition policy

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[2] Quoted in P C McGraw, *Life Strategies: Doing What Works, Doing What Matters* (New York: Hyperion, 1999), at p.56.

[3] Competition policy as understood here encompasses all government policies that preserve and protect competition among independent buyers and sellers in relatively unregulated markets. This includes market opening policies that promote competition in national markets and laws that regulate commercial trade and conduct. Of these, two notable ones are competition law and intellectual property law. See A. Borner and R. Krueger, *The Basics of Antitrust Policy: A Review of Ten Nations and the European Community'* World Bank Technical Paper No. 160, (Washington: The World Bank,1991) See also S. Urata, 'Competition Policy and Economic Development in East Asia' 1 Washington University Global Studies Law Review, Winter/Summer (2002) ("The term 'competition policy' is defined broadly to include not only competition law but other measures such as regulation, trade and foreign direct investment that influence competition.").

[4] Article 2.8 of the WIPO Convention states that 'intellectual property' includes 'the rights relating to literary, artistic and scientific works- performances and performing artists, photographs and broadcasts, inventions in all fields of human endeavour, scientific discoveries, industrial designs, trademarks, service marks, and commercial names and designations, protection against unfair competition and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.' http://www.wipo.int/treaties/en/convention/index.html See also W R Cornish and D Llewellyn, *Intellectual Property: Patents, Copyright, Trademarks and Allied Rights* (London: Sweet & Maxwell, 5th Edition, 2003) at p.6.

[5] Digital markets refer to three distinct, but related industries: computer programs; e-commerce and info-communications. The principal output of digital markets is IP- copyright, patents and trade secrets over computer code. See R A Posner, *Antitrust Law*, 2nd ed. (Chicago: University of Chicago Press, 2001), at p.245.

[6] *Verizon Communications Inc. v. Law Offices of Cutris V. Trinko*, [2004] LLP 540 US 682; *United States v. Microsoft* [2000] 253 F.3d 34; *EC Commission v. Microsoft* [2004] Case T-201/04. See P Thorott, 'EU's Microsoft Verdict Raises Questions', Windows IT Pro, 25 March 2005, at http://www.windowsitpro.com/Article/ArticleID/42133/42133.html. (Describing the US Microsoft case as 'high-profile'), EU Business, 'EU Court to Announce *Microsoft* Verdict', 21

when applied to IPRs depends on the appreciation courts have of their underlying legal and economic nuances. In particular, theories crafted to allow or prohibit refusals to license will be central in shaping competition rules in digital markets, which become more increasingly important in this technological age.[7] For this reason, it is imperative to develop an appreciation of this issue.

Amongst the species of IPRs, copyright has seen the greatest development over the last decade.[8] Copyright protects expression of ideas and information that are of commercial value. Any resulting market power it enjoys is often justified- to reward the owner, as well as to encourage further creativity. [9] Owners are not required to exploit their creations for the benefit of others,[10] and copyright law

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December 2004, (A European Union court is to issue its initial verdict Wednesday in a high-profile anti-trust case pitting US software giant Microsoft against the EU's executive commission.) http://www.eubusiness.com/Competition/041222012144.gw02yo17.

[7] C Shapiro, 'Competition Policy' in E Hope, *Information Economy in Foundations of Competition Policy Analysis* (London: Routlege, 2000).

[8] As a Member of Parliament noted: "Under the IP umbrella, copyright protection deserves special focus, as core copyright activities are one of the fastest growing industries in Singapore, outpacing Singapore's economy over a 15-year period from 1986 to 2001." Z Nordin, Singapore Parliamentary Debates, 16 November 2004 at : http://www.parliament.gov.sg:80/reports/public/hansard/title/20041116/20041116_S0004_T0003.html#1

[9] The phrase 'market power' will be used throughout this dissertation. It is important to stress that this refers to **substantial market power over a significant amount of time**. See Competition Commission of Singapore (CCS) Draft Guidelines on the Section 47 Prohibition (Draft Guidelines), para. 3, available at: http://www.ccs.gov.sg/Doc/GuidelinesConsultation/Abuse_of_Dominant_Position29032005.pdf.. ("An undertaking will not be dominant unless it has substantial market power") See D W Carlton and J M Perloff, *Modern Industrial Organisation*, 4th edn, (Boston: Pearson, 2005) at 642. ("This ability to set price above marginal cost implicitly uses the model of perfect competition as a benchmark against which to measure the behaviour of firm. If this definition is applied literally, probably every firm in the United States has at least a tiny bit of market power. The model of perfect competition is an extreme one that describes few, if any, actual industries. Therefore, presumably, *when courts find that a firm has market power, they must mean the firm has a substantial amount of market power for some significant time*.") (Emphasis mine.) Richard Posner has preferred to term this "monopoly power" since market power as such may inaccurately be understood as the power to affect the price of the goods sold. Non-fungible goods are inherently differentiated according to consumer taste, thus any of these goods possess differing degrees of market power. See R A Posner, *Antitrust Law: An Economic Perspective* (Chicago: University of Chicago Press, 1976) at p. 11.

[10] Para. 3.1 Antitrust Guidelines for Intellectual Property, issued by the Department of Justice, April 6, 1995.

allows owners to procure injunctions and damages against unlicensed users. They may also refuse to license their content if they so choose.[11]

Copyright has expanded rapidly to cover traditionally unprotected subject matter such as computer programs and electronic data – principal outputs of digital markets.[12] Copyright also covers functional interfaces in digital standards. This data is needed for DVDs to play across regions. It is also needed for portable music players to play across different codices and software to work over different operating systems (OS). As the Guidelines recognise, copyright owners may use their copyright as entry barriers.[13] Owners may therefore use their control to access to key components to eliminate industry rivals and stifle the future development of the industry.[14]

As a matter of policy, this is undesirable. Overprotection makes it difficult for subsequent authors to borrow from their predecessors. This violates copyright's mandate to promote creativity, since almost all creative work is derivative.[15] Overprotection also allows owners to distort the competitive

[11] *Continental Paper Bag. v. Eastern Paper Bag* [1908] 210 US 405. ("The right can only retain its attribute of exclusiveness by a prevention of its violation."). *Genentech v. Eli Lilly Co.* [1993] 998 F.2d 931, at 949 (Fed. Cir.) (Patentees must have the power to select exclusive licenses as they see fit). Congress has since codified the patent's right to refuse to use the patent. Section 271(d)(4) provides that a patent owner cannot be deemed guilty of misuse by virtue of its refusal to use or license the patent. 35 USC §271(d)(4). While this is a patent case, the principle applies equally to copyright. See also H Hovenkamp *et al*, *IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property* (New York: Aspen Law, 2003) at §18.8 ("While the statute refers to patent misuse, and does not directly cover antitrust violations, the policy it expresses is still relevant.").
[12] R A Posner, *supra*, n. 4.
[13] *Ibid*, at 10.15. (Noting that "intellectual property rights can be entry barriers".)
[14] See discussion in Chapter I, Part II.D.2
[15] W M Landes and R A Posner, 'An Economic Analysis of Copyright Law', (1989) 18 Journal of Legal Studies 325.

process.[16] In today's digital marketplace, an unprecedented number of essential products are tightly bound up in standards-dependent interfaces.[17] Competition authorities are concerned with two possible abuses of digital copyright. First, owners have the incentive to adopt competitive strategies to prevent rival product compatibility, making it difficult for firms developing alternative standards to compete effectively.[18] Second, there is concern that the number of 'locked in' customers reduces the incentive for the market to adopt a more effective network.[19]

William Cornish and David Llewelyn observed that the growing importance of IPRs make them increasingly susceptible to "critical" scrutiny. [20] Aided by little more than parsimoniously worded legislation and the cautious *dicta* of their peers, judges have attempted a complicated balance of interests underlying two seemingly incompatible regimes: one conferring the right to exclude others, and the other condemning the exercise of this exclusionary right in

[16] R Pitofsky, 'Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy', (2001) 16 Berkeley Tech. L.J. 535 (Stating that the "essential feature that is new about the 'New Economy' is its increased dependence on products and services that are the embodiments of ideas").

[17] See discussion in Chapter I, Part II.D.1.

[18] D Rubinfield, 'Competition, Innovation and Antitrust Enforcement in Dynamic Network Industries', Speech before Software Publishers Association Meeting (1998), at 5-6.

[19] Y M Wang, 'Opening the 'Black Box' of Network Externalities in Network Adoption' (2000) 11 Information Systems Research 61. The recent technological fracas involving Apple's revolutionary iPods music players provide an example of both. Apple has sold over 2 million iPods and owns 90% of the market for hard-drive music players. Its Music Store website provides 70% of all paid-music downloads worldwide. It possesses market power in the clearest sense. Competitors and consumers have complained that songs purchased from the iTunes music store can only be played on an iPod because Apple has thus far refused to license interface information to rival music services or device makers in order to protect its market share.[19] In doing so, Apple potentially restricts competition in the first sense, by refusing access to rivals, as well as locking in consumers, thus abusing its copyright in the second sense. A Salkever, 'A Bitter Apple Replay?', (14 October 2004) BusinessWeek Online at:
http://www.businessweek.com/technology/content/oct2004/tc20041014_9962_tc056.htm.
See also Chapter III, Part IV for a detailed discussion of this issue.

[20] W R Cornish and D Llewellyn, *supra,* n. 3 at iv. (Noting that since the industrialised world operates as a set of knowledge based societies, intellectual property rights have become the foreground features of economies. The way they are exploited will therefore be the subject of greater scrutiny than before, "much of it highly critical.")

certain circumstances. In so doing, they have a responsibility to ensure that the rules governing access do not eviscerate statutory monopoly rights due to owners under copyright law.

Casual observers looking at the vast amount of academic literature on decisions applying competition law to refusals to license IPRs ('the Interface') might assume that such a significant issue has been comprehensively discussed and resolved. If so, then they would be deceived. The debate has largely generated more heat than light. Indeed, it is surprising how unclear the boundaries of the law in refusals to license remain, given the constant rhetoric of how important commercial certainty is. [21]

The call for scholarship to develop competition rules applicable to digital markets has largely gone unanswered. [22] Scholars such as David Teece have noted that regulation of digital markets appear to "be moving in uncharted territory, unassisted by scholarly research on innovation and competition".[23] Unless and until the central issues are clarified, new cases will not have a firm foundation upon which to develop sound precedents. Uncertainty over what constitutes competition law violations is undesirable. Conduct having desirable competitive

[21] I Rahnasto, *Intellectual Property Rights, External Effects and Anti-trust Law*, (Oxford: Oxford University Press, 2003) at pp.13-6. (Criticising the judicial approach of some cases which that base their conclusions on doctrines without proper explication of their goals or analytical framework, and noting that while case law has expanded and new problem areas identified, case law remains vague in terms of theory and practice.)

[22] G Tritton, *Intellectual Property in Europe,* (Sweet & Maxwell: London, 2000) ("Given the lack of clarity of what is meant by a truly competitive economy, it is not surprising that *there is a lack of clarity about the aims of competition law… There is a firm need for the concept of abuse in the context of IPRs to be properly clarified*.") at p.846. (Emphasis mine)

[23] D J Teece, *Managing Intellectual Capital: Organizational, Strategic and Policy Dimensions,*(Oxford: Oxford University Press, 2002) at p.159

effects may be deterred,[24]and uncertain competition rules repel foreign direct investment.[25] Economies as large and resilient as those in Europe and the US may survive false condemnations of efficient market conduct with little more than a bad hangover. Singapore, with its umbilical dependence on international trade and investment from dominant, high technology multinationals, will feel its repercussion much more keenly. The success achieved by courts and regulators here in prudently intervening where appropriate will be crucial for Singapore's economic future.

It is therefore timely to understand the challenges courts and regulators in Singapore may encounter at the Interface to cultivate a principled growth of local jurisprudence. Following EU and US cases may provide some initial relief against commercial uncertainty. However, the relief is at best, only temporary. Singapore will soon be required to develop autochthonous rules to suit a vastly different socio-economic climate from these jurisdictions. Each chapter in this dissertation therefore attempts to carefully formulate guidelines for implementing competition

[24] As Baxter put it: "If our antitrust laws were to impede technological development to any substantial degree, the net effect of those laws on our well-being would surely be negative." W.F. Baxter, 'Antitrust Law and Technological Innovation', (1985) Issues in Science and Technology 80

[25] US firms in particular are loath to pursue investment opportunities in the face of insecure IPRs, especially in light of the traditional antipathy inherent in US antirust law toward compulsory licensing. A review of the cases cited in that article reveals that few of the US courts that have considered the issue have actually held that an intellectual property owner's refusal to license violated antitrust law. The rare instances of compulsory licensing described in the article involve judicial approval of a compulsory licensing order imposed by US federal antitrust enforcement authorities as a condition of settlement of an antitrust dispute R Pitofsky *et al*., 'The Essential Facilities Doctrine Under U.S. Antitrust Law', (2002) 70 Antitrust L.J. 443, at pp.458-61. See also D M Gitter, 'International Conflicts over Patenting Human DNA Sequences in the United States and the European Union: An Argument for Compulsory Licensing and a Fair-Use Exemption', (2001) 76 NYU. L. Rev. 1623, at p. 1681 (noting, with respect to patent cases, the traditional rejection under U.S. law of compulsory licensing) R G Badal and H E Ware, 'EU's Differing Approach', (2002) Nat'l L.J A15 www.nlj.com, at A15 (explaining that U.S. firms are watching closely EC competition judgments, including the IMS case, in making investment decisions); T A Piraino, Jr., 'A Proposed Antitrust Approach to High Technology Competition' (2002) William and Mary Law Review 67

rules in digital markets. Done properly, these guidelines can approach the clarity of bright line rules without sacrificing the ability for the law to be flexible and responsive to factual peculiarities. These guidelines may then be revised and rebutted in the light of experience.

Chapter I examines the basis for competition law interfering with copyright in Singapore. By understanding the rationale for copyright protection, it will be shown that a desire to boost trade revenues and curb digital piracy have strengthened copyright at the expense of distorting the access-incentive balance underlying copyright policy. This distortion has lead to copyright owners exercising market power traditionally possessed by patent owners. Overbroad copyright risks retarding innovation, particularly in digital markets where innovation often depends on interoperability and access to copyright content.[26] While endogenous checks exist within copyright law, they are unlikely to address the distortion satisfactorily. The trend has instead been to rely on competition law as a panacea to counterbalance the effects of burgeoning copyright.

Chapter II develops the inquiry by examining the law at the Interface. It observes that the relevant rules, while simple to state, are difficult to apply. It begins by looking at the Singapore Competition Act 2004 [27] ('Competition Act'), and studies the relationship between generic competition and sector specific regulation, which copyright resembles. The study turns to how courts have determined key concepts such as 'dominance' and 'abuse' in IP and digital markets. It observes that judicial decisions are inconsistent and at times,

[26] 'Content' here refers to subject matter protected under copyright laws, and not 'content' in the sense of knowledge or unprotectable information.
[27] (Cap 46, 2004)

unprincipled. Courts may proceed on the assumption that the ends of competition policy are clear, and the analytics to resolving digital copyright cases simple. These are most likely get it wrong. Like the allegorical iceberg, issues appear straightforward, but to resolve them meaningfully, courts must be prepared to delve much deeper.

Chapter III proposes the first of two pillars for developing sound competition theory in digital copyright markets: clear economic goals. Cases have generally been driven by three schools of economic theory. The first is the Harvard School, which vigorously opposes market power and high market concentration. Harvard regulators believe dominance is intrinsically bad because it reduces product diversity and technological development. Where copyright confers such market power it should be scrutinised and where appropriate, cauterised. The second view, adopted by Chicago School regulators, use competition law to promote social welfare through the free working of markets. The goal of competition law is then to support market created efficiencies by eliminating practices that corrupt market efficiency through trade restraints. The third view comes from the Schumpeterian School, which proposes that a retooling of competition analytics is required to recognize the new competitive landscape. It takes into account characteristics of digital markets such as network effects, tipping, path dependency and lock-ins. The Chapter concludes with an observation that while each successive economic theory may increase the rigour of competition policy, a proper understanding of goals at the Interface is still in its infancy.

Chapter IV completes the analysis in discussing the second pillar for developing competition theory at the Interface: sound legal analytics. The discussion starts from a rudimentary property rights approach. Under this approach, the proprietary nature of digital copyright determines the threshold for 'abuse'. A second approach pivots upon the scope of the copyright grant, where conduct deemed to be within the scope is inviolable, whereas conduct outside of it will be subject to scrutiny. In the final approach, courts attempt to weigh the perceived costs of allowing owners to refuse to license against a set of perceived benefits. The Chapter concludes with the suggestion that courts in Singapore may find elements of each approach that may be relevant in developing an autochthonous approach.

II. SOURCES OF LAW AND AREAS OF FOCUS

A. *Law*

Jurisprudence from courts in the US and EU are likely to be the most influential in Singapore. The US Sherman Act permeates competition laws in jurisdictions as diverse as the EU, Japan and Australia. [28] In 2003, the Economic Review Committee recommended that Singapore enact a generic competition

[28] Section 2 (15 USC § 2) declares that it is unlawful for undertakings to monopolize or attempt to monopolise trade or commerce within the US or with foreign nations It thus limits the means by which undertakings may lawfully either acquire or perpetuate market power, or as well as attempts to do so. *Eastman Kodak Co. v. Image Tech. Services, Inc.*,[1992] 504 U.S. 451, 480, 112 S.Ct. 2072, 119 L.Ed.2d 265. (Kodak), citing *United States v. Grinnell Corp.*, [1966] 384 U.S. 563, 570-71, 86 S.Ct. 1698, 16 L.Ed.2d 778 ("The offense of monopoly power under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.") Neither necessitates a rule of reason inquiry. The Court added a third limb: (3) that as a result, the plaintiff suffered antitrust injury. See also K Middleton *et al*, *Cases and Materials on UK and EC Competition Law*, (Oxford: Oxford University Press, 2002) at 14. ("The influence of US antitrust scholars on the development of competition laws throughout the world has been profound.")

law.[29] However, it was not until the US-Singapore Free Trade Agreement, that generic competition law found its way into Singapore's domestic markets.[30] Like competition laws in the US and EU, the Competition Act prohibits anticompetitive mergers, collusive agreements and abuse of dominance. The means by which the Act was introduced, as well as the significant influence the US continues to have on the local economy, compel the conclusion that developments in US antitrust jurisprudence will remain a closely followed point of reference. If more reasons are needed, it need only be remembered that the US is also the largest exporter of technology in the world.[31]

Jurisprudence from EU and UK will also be relevant. Structurally, the Competition Act more closely resembles the UK Competition Act 1998, [32] which

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[29]The ERC suggested that to encourage the growth of enterprising startups, a generic competition law should be enacted "to institutionalise a regime where no company enjoys unfair privileges, and must compete on equal footing in the market with others. See Ministry of Trade and Industry, Singapore, http://www.mti.gov.sg/public/ERC/frm_ERC_default.asp?sid=99 at p.118.

[30] On 1 January 2004, the US-Singapore Free Trade Agreement (USSFTA) came into force. The full text version of the USSFTA can be found at http://www.ustr.gov/Trade_Agreements/Bilateral/Singapore_FTA/Section_Index.html. The relevant chapters for discussion on its relevance to the interface between competition policy and IPRs are Chapters 12 and 16. Article 12.2, Footnote 12-1 provides "Singapore shall enact general competition legislation by January 2005, and shall not exclude enterprises from that legislation on the basis of their status as government enterprises." The Competition Policy Chapter in the USSFTA fulfils two broad functions. First, it was designed to ensure that having obtained mutual market access, this access is not nullified or impeded by an unfair business environment. In this sense, it is "enabling", and provides the necessary structure for optimal exploitation of FTA concessions. Secondly, the Competition Policy Chapter was designed to provide the assurance that the Singapore government would continue in its policy of allowing Government Linked Companies (GLCs) to act independently. Chapter 12 is entitled "Anticompetitive Business Conduct, Designated Monopolies, and Government Enterprises" Chapter 16 is entitled "Intellectual Property Rights". The IPR Chapter was to provide US and Singapore based companies with increased IP protection. These are significantly stronger than those contained in the TRIPS agreement. See T Koh and Chang L L, *The United States Singapore Free Trade Agreement: Highlights and Insights* (Singapore: Institute of Policy Studies and World Scientific Publishing, 2004)

[31] 144 Cong. Rec. S12,377 (Daily ed. Oct. 12, 1998) (statement of Sen. Hatch) ("America exports more copyrighted intellectual property than any country in the world....[I]n 1996, the core U.S. copyright industries achieved foreign sales and exports exceeding $60 billion, surpassing, for the first time, every other export sector....").

[32] Senior Minister of State for Trade and Industry, V Balakrishnan, Singapore Parliamentary Debates, 19 October 2004

takes its form from the EC Treaty.[33] Early development of copyright law in England set the framework that was largely adopted throughout the Commonwealth. These principles were selectively welded together with some Continental influences such as moral rights in copyrighted works, and later diffused internationally through treaties and conventions, which embodied a multilateral aspiration for international harmonisation of IP law.[34] Thus, while the Singapore Copyright Act 1999 (Copyright Act)[35] was derived from the Australian Copyright Act 1968, cases from the US, the UK and to a lesser extent, the EU have contributed to its development. In considering issues concerning Singapore copyright law, statute and case law from these jurisdictions are therefore relevant.[36]

Taken together, the laws and accompanying academic discourse from the EU and US therefore form the bulwark for this dissertation. Despite some differences in procedure and substance, IP and competition laws, by virtue of their nature of being commercial rules, are broadly bound by common denominators.[37] Singapore is unlikely to generate enough cases to establish a clear set of precedents from which to develop an autochthonous competition law system in

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http://www.parliament.gov.sg/reports/public/hansard/title/20041019/20041019_S0004_T0006.html ("The Bill before the House is largely modelled on the UK's Competition Act 1998.")

[33] Treaty of Amsterdam Amending the Treaty on European Union, the Treaties Establishing the European Communities and Certain Related Acts, Article 230, Oct. 2, 1997, 1997 O.J. (C 340) 1.

[34] D I Bainbridge, *Intellectual Property*, 5th edn. (Essex: Longman, 2002), at p.199. ("[T]here are many similarities and most of the basic principles are common")

[35] Cap 63, 1999 Rev Ed. For an cogent account of the Copyright Act's history, see G Wei, *The Law of Copyright in Singapore*, (SNP Editions: Singapore, 2000) at pp. 31-6.

[36] As S Jayakumar, Minister of Law noted: "We have taken into account legislation in other countries including that of the United States, the United Kingdom, Australia and Canada." Singapore Parliamentary Debates, 16 November 2004 at *supra*, n.7.

[37] D Geradin, 'Limiting the Scope of Article 82 of the EC Treaty: What can the EU learn from the US Supreme Court's Judgement in *Trinko* in the wake of *Microsoft*, *IMS* and *Deustche Telekom*?' (2005) Common Law Market Review at p. 29.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=617263 at p. 29. (Noting that despite the contextual differences between US antitrust law and EC competition law, EC competition laws could learn from the US *Trinko* decision.)

the near future. It is therefore likely to adopt a 'best practices' approach from the US and EU, as it has with its selective adoption of its competition legislation, and then tweaking it to suit its own ends.[38] This makes perfect commercial sense. Firms caught by the Competition Act will include foreign multinationals with sufficient individual or collective market power to distort the competition process in Singapore.

B. *Refusals to License*

The debate on the desirability of applying competition law to IPRs in Singapore is largely academic, since the Competition Commission of Singapore's Draft Guidelines ('CCS Guidelines') made clear that it does.[39] The author therefore proceeds on the belief that the aims of his dissertation would be best served by highlighting areas of concern for future study, or else directly making concrete suggestions to refine the law at the Interface.

Refusals to license may include refusals *simpliciter*,[40] charging high prices for access such that it would not be economically feasible for potential licensees to seek access. [41] It may also take the form of a refusal to license unless the potential licensee agrees to a tying agreement. In any case, it should be said that there is much commercial sense in licensing. Few copyright owners have the

[38] As Vivian Balakrishnan noted, "The Bill adopts international best practices, and yet takes into account our specific economic characteristics and requirements, in particular, the fact that we are a small open economy." V Balakrishnan, *supra*, n.31.
[39] Competition Commission of Singapore (CCS) Draft Guidelines on the Section 47 Prohibition ('Guidelines'), available at:
http://www.ccs.gov.sg/Doc/GuidelinesConsultation/Abuse_of_Dominant_Position29032005.pdf
[40] *Volvo v. Veng (UK) Ltd* Case 238/87 [1988] ECR 6211.
[41] *Independent Serv. Org. Antitrust Litig. CSU* [2000] 203 F.3d 1322, 53 U.S.P.Q.2d (BNA) 1852 (Fed. Cir.) (*Xerox*) Xerox had set the prices for parts so high that ISOs would be effectively eliminated as competitors in the relevant service markets.

resources to manufacture, distribute and sell their works themselves. The vast majority of owners license their rights to maximise their financial potential. Rarely does a copyright owner capriciously refuse to license. Failure to do so may mean that potential licensee will simply make their technology compatible with other rival systems. However, it is nonetheless entirely conceivable that owners may take a calculated move to refuse to license. Apart from allowing the discussion to centre on the conceptual core at the Interface mentioned earlier, refusals to license are also frequently used in conjunction with other forms of prohibited conduct such as tying and exclusive dealing. As such, jurisprudence here forms a common denominator for assessing abuse of dominance cases involving IPRs.

C. *Digital Copyright Covering Industrial Standards*

Digital markets permeate global and national economies. Universal programmable computing machines have existed for over 50 years.[42] A vast majority of new technical developments involve computer technology, even if the developments themselves do not appear at first sight to be so connected. Modern photocopiers, electronic mail, digital music and DVD standards all owe something to computer science.[43] Software, protected primarily by copyright, fuels the spectacular advances in technologies underlying computers and info-communications.[44] Two key sectors in digital markets are personal computers

[42] D I Bainbridge, *supra*, n.33 at p.190.
[43] *Ibid*.
[44] These have led to reductions by orders of magnitude in the costs of storing and transmitting information Indeed, one commentator recently opined that "[t]he extraordinary innovations of our modern world are increasingly the result of networks ...."G.L. Priest, 'A Ruling for 'Predators'-and Consumers', Wall St. J., May 3, 2001, at A18.

(PCs) and Internet access. As of 2005, 35.2% of EU residents own a PC, and 45% have access to the Internet.[45] In the US, the figure for PC ownership is 58%,[46] and Internet access rate of 42%.[47] In Singapore 74% of households own a PC, 65% have Internet access, and 83% of all businesses use IT appliances.[48] The immediate and 'spill-over' effects Interface cases create will likely therefore be significant.

Digital copyright industries differ from traditional ones in two main respects. First, digital markets tend to have high fixed costs and low marginal production costs. Their products require massive investments in R&D or physical or virtual networks; once this initial investment is made, it is relatively costless to create additional units. These industries are said to exhibit increasing returns to scale, and tend to be highly concentrated.[49] Second, digital copyright markets often exhibit network effects.[50] This means products become more valuable as the number of users increase.[51] In digital industries, network effects are significant.

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[45] http://epp.eurostat.cec.eu.int/cache/ITY_OFFPUB/KS-CD-04-001-5/EN/KS-CD-04-001-5-EN.PDF

[46] Forbes Magazine, (1999) in Fischer and Lorenz, Internet and the Future Policy Framework for Telecommunications, A Report of the European Commission, (2000), at p. 30.

[47] http://www.nua.ie/surveys/how_many_online/n_america.html

[48] S Ng and Cui H M, Asia Pacific Information & Communication Technology Technical Meeting, Singapore Country Report 2004. Available at: http://www.unescap.org/stat/ict/ict2004/6.Country_report-Singapore.pdf

[49] For an industrial economic approach to this, see J Sutton, *Sunk Costs and Market Structure* (Cambridge: MIT Press, 1991). Sutton distinguishes between traditional exogenous sunk cost industries, and R&D intensive endogenous sunk cost industries. Importantly, he argues that the latter will often be highly concentrated, with firms wielding substantial market power and therefore prime targets for competition regulation for anticompetitive abuses.

[50] Essentially, network effects are a market phenomenon where the value of the network increases in the number of users. P Lewin, 'Introduction: The Market Process and the Economics of QWERTY', in P Lewin, (ed.), *The Economics of QWERTY* (Hampshire: Palgrave, 2002) ("Liebowitz and Margolis introduced the term "network effects" to substitute for the term network externalities, to account for the possibility, indeed, the likelihood, these effects are often internalized.") See Annex C for a detailed explanation of network effects. See also discussion in Chapter III, Part IV.

[51] For example, if more people use the Yahoo!'s chat service, the more people each user can message to. Traditional industries such as the F&B industry do not have this effect. No one enjoys

Digital economics explain that because of network effects, the market 'tips' towards single firm domination. [52] This is because network industries tend to gravitate towards products with the highest number of compatible co-users. Copyright owners with a large installed base of customers have a distinct advantage: customers are likely to buy enhancements or replacements, since products are both backward and laterally compatible; it is worth remaining with the same product brand. This creates a constant flow of demand for incrementally improved products from the same company, rather than radically new products from others. Copyright therefore plays an important role in the ability of firms to achieve and maintain their dominance through direct or indirect control of the industry standard.

III. OMITTED PERSPECTIVES

The Interface is a dimension of enormous depth and scope, encompassing many disciplines,[53] giving rise to multifarious issues flowing from strategic market interactions in digital industries. While every effort has been made to discuss the key issues that may be important to the development of competition law in Singapore, a dissertation like this cannot cover everything, and should never pretend to. A number of notable areas and perspectives are missing in whole or part.

Coke more because another drinks it. For a definite work on this area, see M A Lemley and D McGowan 'Legal Implications of Network Economic Effects' (1998) 86 Cal. L. Rev. 479.

[52] M A Lemley and D McGowan, 'Legal implications of Network Economic Effects' (1998) 86 California Law Review 469 at p.523. See discussion in Chapter III, Part IV.

[53] Within this dissertation there is relevant discussion of intellectual property law, competition law, company law, land law, tort law, contract law, criminal law, administrative law, industrial economics, the economics of innovation, technology economics and digital economics. In addition, there are elements of organisational theory in the structure and dynamics involved when one considers the strategies high tech firms take such as ecology and transaction cost theories.

First, the focus is primarily on digital copyright. Copyright issues are growing in significance and frequency as the full impact of the digital revolution is increasingly felt by economies across the globe. In contrast, patent cases tend to raise fewer problems in digital markets, largely because unlike copyright, the balance between stakeholders has been largely consistent across various industries and over time. However, because much of antitrust jurisprudence was developed from patent cases, they provide an important backdrop for discussion. Trademarks and geographical indications do not give owners economic monopolies in their products. Reported cases involving abuses of trademarks and geographical indications are rare.[54] This rarity suggests that the problem, unlike in copyright law, has largely been internalised. Further, their justification rests less on appropriability and innovation as in the case copyrights, than on avoidance of confusion about the origin of the goods or location.

Second, while anti-competitive agreements and mergers are important features when considering IPRs,[55] the focus is on unilateral, rather than collusive aspects of competition. This dissertation is also unconcerned with the anticompetitive effect of copyright licensing. Rather, the focus is on the competitive effects of copyright *per se*, which examines the effects of the copyright monopolies have on competition.

[54] G Tritton, *supra*, n.21, at p. 572.

[55] This includes exclusive dealing agreements, resale price maintenance agreements, R&D joint venture agreements, mergers and patent pools. Vertical and Horizontal agreements on restraints of trade are governed by Section 1 of the Sherman Act, Article 81 of the EC Treaty and Section 34 of the Competition Act. Mergers are governed by Section 7 of the US Clayton Act, the EU Merger Regulation and Section 54 of the Competition Act. For a comprehensive discussion of anticompetitive licensing agreements and mergers, see G Tritton, *ibid*.

Third, justifications for intervention by competition law often include concerns about the increasing encroachment of IP rights into cultural commons and constitutional liberties such as free speech.[56] The Open Source movement and similar models are also relevant.[57] However, these have no place in the present discussion.

[56] R J Commbe, *The Cultural Life of Intellectual Property: Authorship, Appropriation and the Law* (Florida: Duke University Press, 1998); P Drahos, 'Decentring Communication: The Dark Side of Intellectual Property' in T Campbell and W Sadurski (eds.), *Freedom of Communication* (England: Dartmouth Publishing Company, 1994).

[57] M Maher, 'Open Source Software: The Success of an Alternative Intellectual Property Incentive Paradigm', (2000) 10 Fordham Intell. Prop. Media & Ent. L.J. 619 (Showing how the science of complexity theory is able to explain the open source movement's ability to translate non-economic incentive mechanisms into a process for technological development and innovation); S M McJohn, 'The Paradoxes of Free Software', (2000) 9 Geo. Mason L. Rev. 25 (Concluding that open source software may have a greater effect on the law of developing technologies than the law will have on software practices); D. McGowan, 'Legal Implications of Open-Source Software', (2001) U. Ill. L. Rev. 1; D Bollier, 'The Power of Openness: Why Citizens, Education, Government and Business Should Care About the Coming Revolution in Open Source Code Software', available at http://eon.law.harvard.edu/opencode/h2o/#intro (illustrating the broad effect of changes in open code software); see also www.gnu.org ; www.opensource.org.

CHAPTER I:
♦ COUNTER-BALANCE ♦

I. INTRODUCTION

Intuition will tell the thinking mind where to look next.

Dr. Johnas Salk[58]

A useful point to start the discussion is to reflect on how it developed to its present state. Just because competition law regulates access to copyright does not make it self-evident why it should. Copyright is a state sanctioned exclusionary right conferred on owners precisely so they may control access to, and exploitation of, their work. It should follow that copyright owners may refuse to license their copyright content if they so please. It has therefore been argued that there must be a strong presumption against any attempt to illegalise refusals to license. [59]

Yet, the Singapore Competition Act 2004 undeniably includes copyright as one of the sectors under its purview.[60] Chapter I posits that this may be because copyright law has somehow proven inadequate in regulating its own anticompetitive excesses. Part II introduces the nature and importance of copyright, arguing that digital copyright are an aberration in the traditional balance of access between right-holders and the public. In Part III, the discussion turns to the primary ways public access is preserved under copyright law should an owner refuse to license its content. In each case, significant limitations in each case prevent satisfactory resolution of the utilitarian imbalance within copyright

[58] Discoverer of the Polio Vaccine. Quoted in S R Covey, *The 8th Habit*, (London: Simon & Schuster, 2004) at p. 52.
[59] F K Beier, 'Industrial Property and Internal Market' (1990) 2 IIC 131 at p.147.
[60] The Third Schedule exempting the application of competition law only excludes firms "entrusted with the operation of services of general economic interest or having the character of a revenue-producing monopoly." See Section 1, Third Schedule, Singapore Competition Act 2004, (Cap 46).

law alone. For this reason, competition law may have been introduced to counterbalance a seeming deference to private interests at the expense of access by rivals and the public. Part IV concludes by examining a key issue at the threshold of the Interface: whether the two regimes are inherently incompatible. It suggests that as tools of competition policy, competition law and copyright law share complementary goals, despite their apparent incompatible means of achieving those goals. However, because insufficient attention has been paid to understanding how they interact, courts have found it difficult to tap this synergy.

II. THE NATURE AND IMPORTANCE OF COPYRIGHT

Copyright has evolved from an initial author-centred right to a *quid pro quo* system. Owners enjoy copyright on a utilitarian basis, which rests on a balance. On one hand lies the owner's right to appropriate its investment. On the other lies the right of the public to access the work whether for direct consumption or to use its contents to create complementary or competing works. Copyright plays a crucial role in setting up a market for the transaction of information goods between owners and the public. In recent years, the growing importance of copyright in national trade balances and concerns over digital piracy have spurred developed countries to push for stronger multilateral and bilateral commitment for stronger copyright. These developments have threatened to upset the copyright system as well as the innovation process. [61]

[61] The use of 'innovation' rather than 'creativity' here is an indication that the line between patent rights and copyrights are blurred, an observation that will be made clear later in the chapter.

A. *Theoretical Justifications for Copyright*

Understanding the basis for copyright is central to determining the extent that it should be regulated by competition law. Society has exercised its discretion to protect some categories of information rather than others. The interests underlying these decisions will inevitably drive inquiries as to the immutability of copyright to competition law interference. There are two main explanations for copyright protection. First, the labour justification recognises the intrinsic value of human creation that justifies reward for labour exerted. Copyright therefore recognises individual intellectual labour. The second justification is more contemporary, and has a utilitarian basis. Authors are given economic inducements to share the creation with society in return for a reward so that creative activity may be encouraged.[62]

John Locke offers perhaps the best-known labour theory justification of private ownership. Lockean theory is based on the idea that those who enhance previously unowned objects should own what they produce. [63] If what they produce can be taken from them without reason or compensation, they may be no better than slaves. Indeed, copyright is the most basic form of property because the literary, artistic, or musical works that it protects are essentially the products

[62] See generally, D Chisum and M Jacobs, *Understanding Intellectual Property Law* (Matthew Bender: New York, 1992).

[63] In Locke's words: "Though the earth, and all inferior creates be common to all men, yet every man has property in his own person. This nobody has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his." see J Locke, 'The Second Treatise' in P. Laslett (ed.), *The Two Treatises of Government*, (Cambridge: Cambridge University Press, 1970) at 305. Just as 'body' includes the mind, 'labour' extends to intellectual labour, since no labour is purely physical.

of his mind.[64] In addition, these rights extend to protecting the personal interests of the author, including the acknowledgement and non-adulteration of his work, forming the foundation for moral rights.[65]

At the same time, Lockean theory recognises that were creators given control both over their work and every element used in their creation, there would be little raw material left for later authors.[66] To promote continual innovation and public consumption, copyright law divided the possible rights in uses of a work between their creators on one hand and the public on the other. This is the familiar 'idea-expression dichotomy', where expression is protected while the underlying ideas are not.[67]

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[64] On this view, it is positive law's realisation of a self-evident ethical precept. See L Bently and B Sherman, *Intellectual Property Law* (Oxford: Oxford University Press, 2001) at p.32.

[65] Moral rights are personal rights belonging to authors or creators of copyright material and exist quite independently from economic rights, and continue to exist even after the economic rights have been transferred. The principal moral rights are: (1) the right of attribution, that is the right of the creator of a work to be publicly identified as such and to prevent others from claiming authorship of the work, to prevent others from wrongfully attributing to an author's works that are not his or hers or that are unauthorised altered versions of his or her work; and (2) the right of integrity, that is the right to object to distortions or derogatory distortions of a work. The obligation to afford moral rights to creators of copyright materials arises from Article 6bis of the Berne Convention. They are based on the Kantian belief that the author's right of communication to the public should be insulated from the risk of adulteration that accompanied unauthorised access. I Kant, 'Of the Injustice of Counterfeiting Books', in, W Richardson, ed., *Essays and Treaties on Moral, Political and Various Philosophical Subjects* (1798) at pp.229-30. The right of appropriation and moral rights represent Lockean theory's lasting contribution, gaining prominence in diverse copyright systems internationally, even securing a place as a fundamental human right. See *RTE v. Commission (Magill)* [1995] ECR I-743, (explaining "The Court of First Instance is right ... in stating that the essential function of copyright is to protect the moral rights in the work and ensure a reward for creative effort"); G Dworkin, 'Moral Rights and the Common Law Countries', (1994) 5 Austl. Intell. Prop. L.J. 5; Charter of Fundamental Rights of the European Union Article 17, at para. 2; W Fisher, 'Theories of Intellectual Property', in *New Essays in the Legal and Political Theory of Property'*, in S R Munzer (ed.) (Cambridge: Harvard University Press, 2001) at 169-73 at pp.169-73; D Fewer, 'Constitutionalizing Copyright: Freedom of Expression and the Limits of Copyright in Canada', (1997) 55 U.T. Fac. L. Rev. 175 at pp. 187-89, pp. 191-93 (discussing the application of this theory to Canadian intellectual property law). Universal Declaration of Human Rights, Article 27(2) reads: "Everyone has the right to the protection of the moral and material interests resulting from scientific, literary or artistic production of which he is the author." http://www.un.org/Overview/rights.html

[66] J Locke, *supra*, n.6.

[67] Expression provision for this may be found in the US: 17 USC § 102(b) (1994). While Singapore does not statutorily codify this, it clearly is fundamental to the sanction of reverse engineering in Section 39B of the Singapore Copyright Act, Cap 63, 1999 Rev. Ed.. See also

While Lockean theory provides a basis for individual enrichment and allocation of rights, it does not capture the multifarious relationships between the interests of the public and the author.[68] Information goods are social products, rather than the effort of the author's labour alone. The copyrighted work builds on earlier works, and in today's integrated digital marketplace, is often the outcome of concerted efforts of diverse workgroups comprising developers, programmers, and project directors. Further, most intellectual creation today is carried on at the behest of employers or pursuant to some form of sponsorship or commission.[69] Copyright therefore does not favour the *creators* as much as the *employers* who acquire the rights through contract or employment law.[70] Accordingly, the natural rights justification for copyright is a weak one, and has generally been rejected by Commonwealth and US courts. [71]

The contemporary view is that if copyright is to be the vehicle for the claim to own the value of adding one's labour to the common stock of information, then the labour must produce a useful product.[72] This utilitarian

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Robert John Powers School Inc v Tessensohn [1993] 3 SLR 724, where the dichotomy was recognised and accepted by the Singapore Court of Appeal.

[68] H M Spector, 'An Outline of a Theory Justifying Intellectual and Industrial Property Rights' (1989) 8 EIPR. 270 at p.273.

[69] This argument was used to good effect in *IMS Health*, where the plaintiff argued that it was the group of pharmacies, rather than the defendant alone that should be given the right to grant access to its database. See *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG*, [2004] ECR 0000.

[70] M Perelman, *Steal This Idea: Intellectual Property Rights and the Corporate Confiscation of Creativity* (New York: Palgrave, 2002) at 21. (Observing that individuals, lacking the power of corporations, soon found their intellectual property being appropriated by them.)

[71] This is the law in Singapore, the US and the EU. H Hovenkamp *et al*, *IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property* (New York: Aspen Law, 2003) at §1.1 ("The principal basis for intellectual property protection in the United States is the utilitarian or economic incentive framework.") D Vaver, *Intellectual Property Law: Copyrights, Patents and Trademarks* (Ontario: Irwin Law, 1997) at pp.6-13; D Fewer, *supra*, n.8. G Wei, *The Law of Copyright in Singapore*, (SNP Editions: Singapore, 2000).

[72] Otherwise mere 'sweat of the brow' claims will need to be asserted under *sui generis* law like the emerging European database laws, unfair competition law or unjust enrichment law. See H Hovenkamp *et al*, *supra*, n. 14 at §1.1

justification shifts the focus from reward-based exploitation rights to a *quid pro quo*. As the US Supreme Court explained in the landmark case of *Mazer v. Stein*:

> "The copyright law, like the patent statutes, makes reward to the owner a secondary consideration… the economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that it is the best way to advance public welfare through the talents of authors and inventors in 'Science and useful Arts'."[73]

This view has been expressly adopted in Singapore.[74] Thus, modern copyright grants the owner legal monopoly as a payment for its contribution to cultural, scientific or artistic progress. While expressly recognising the public interest is to be welcomed, it begs the question of how the balance might, in practice, be made. As William Landes and Richard Posner famously declared, the central challenge in copyright law is to strike the correct balance between public access and private incentives.[75] It is submitted that a key point to the resolution of this challenge lies in understanding the mechanism for appropriating copyright rents.

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[73] [1954] 347 US 201. Article I, Section 8, Clause 8 of the United States Constitution empowers the Congress to legislate: "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."

[74] S Jayakumar Minister of Law noted that in developing copyright law, it was important to "strike a good balance between the interests of copyright owners and those of the copyright users." Singapore Parliamentary Debates, 16 November 2004 at: http://www.parliament.gov.sg:80/reports/public/hansard/title/20041116/20041116_S0004_T0003.html#1

[75] W Landes and R A Posner, 'An Economic Analysis of Copyright Law' (1989) Journal of Legal Studies XVIII at 326. (Noting that finding and maintaining the access-incentive balance is the central problem in the law of copyright.)

B. *Appropriating Copyright*

Creation of copyright content requires investment of resources. This will be suboptimal if owners did not expect to make a profit from it. To do so, a market mechanism is needed. The key difficulty in devising a mechanism lies in the dichotomous 'public good' nature of information, which is at once non-excludable, and non-rivalrous.[76] The sale of copyright content requires disclosure of information. However, once information has been disclosed to buyers, it is extremely difficult to prevent these buyers from disclosing *en masse* to non-paying users. Unlike land and chattels that occupy only one place at any given time, a copyright owner who sells its content cannot, except by physically restricting the recipient, exclude the rest of the world from possessing it because multiple users *multiply*, rather than *consume* the content. [77] Asymmetric information may make it difficult for owners to prevent free riders and imitators from misappropriating its work. This is made worse in digital works. Digital works may be copied quickly costlessly and numerously, and suffer from no loss in quality from multiple reproductions.[78]

[76] Essentially, 'non-excludable' refers to the fact that the copyright owner cannot control access to its content once it has been disclosed; 'non-rivalrous' refers to the fact that a person consuming the copyrighted content will not reduce the amount available to others. For a detailed discussion of these characteristics on the immutability of copyright, see Chapter IV, Part II.

[77] Thomas Jefferson analogised public goods to one individual lighting his candle from the flame of another, since latter suffered no loss in heat or light as a result. See T Jefferson, *The Portable Thomas Jefferson* (New York: Penguin Books, 1985).

[78] Knowledge today is nearly costless to reproduce, communicate and distribute because of the Internet and mobile communications technology. Reproducing binary information also allows perfect replicas, in contrast to physical reproductions of literary, artistic or musical works that suffer the inability to replicate human skill.

Economic theory teaches that unregulated access would drive the price of the product to its negligible marginal cost of reproduction.[79] If all consumers free ride, then the public good would surely not be provided in the first place, at least not at a socially optimal level, since the owner receives no revenue.[80] This leads to underproduction by the owner, underinvestment by existing and potential entrants, and therefore consequent market failure.[81]

It follows therefore that central to the ability to exploit copyright content effectively is its owner's control over access. Rather than providing the incentive themselves, governments design copyright law with a market-based reward system of compensation for the effort expanded and expense incurred because of creating a work for public use.[82] Copyright alleviates 'free rider' problems through granting authors power to control the quantity and quality of the information product available on the market by controlling its access and dissemination through private and state enforcement.[83] This raises the challenge of devising a mechanism to transfer copyright content to society while ensuring that content providers are not discouraged from investing.

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[79] See generally, D W Carlton and J M Perloff, Modern Industrial Organisation, 4th ed., (Pearson: Boston, 2005) at pp. 526-36.

[80] S Bensen, 'New Technologies and Intellectual Property: An Economic Analysis' (1987) RAND Report N-2601-NSF.

[81] F M Scherer, *Industrial Market Structure and Economic Performance*, 2nd edn, (Rand McNally Co: Chicago, 1980) at p. 444 (Arguing that perfect competition would eradicate incentives for innovation without a system if intellectual property rights.)

[82] While prizes, grants and subsidies are given in limited cases, they do not form the general basis for copyright appropriation. In contrast to prize systems, where the winner is unilaterally picked, IPR allows the public to determine who should be rewarded as well as the size of that reward. The more copies of a book that is purchased, the greater the financial reward that accrues to the IPR owner Jeremy Bentham argued that 'an exclusive privilege is of all rewards the best proportioned, the most natural, and the least bothersome. J Bentham, 'A Manual of Political Economy', in J Bowring (ed.), *The Works of Jeremy Bentham* (Edinburgh: Tait, 1843) at 31.

[83] See Sections 31-34 of the Singapore Copyright Act, *supra*, n.10, for civil action, and Section 136 for criminal penalties regarding copyright infringement.

Copyright law operates at two levels in an attempt to do this. First, it operates pre-grant by incorporating natural rights theory's contribution in protecting expression and not ideas. The seminal US Supreme Court case of *Feist Publications, Inc. v. Rural Tel. Serv. Co.* built on the Lockean idea-expression dichotomy and held that utilitarianism also requires fair access by the public and future authors.[84] Second, if content qualifies for copyright protection, the legal monopoly conferred is limited in its scope and duration. The owner enjoys exclusive rights over access to, and monopolisation of, his works for a limited time. During this time, the public's interests of access are preserved through exceptions and limitations instituted in copyright legislation and supplemented by case law.[85] This forms the basis of the utilitarian balance.

C. *The Rise and Rise of Copyright*

The last century has seen increased political and legal activities designed to strengthen the various types of protection for ideas. As new forms of creativity bring new products to the market, owners seek new proprietary rights under the *quid pro quo* of utilitarianism. This may be due to two related reasons. First, a country offering stronger rights will encourage content owners, assured of financial returns, to exploit its content there compared to another with a high likelihood of free riders. [86] An upward strengthening of copyright thus seems inevitable as each country attempts to outdo the others. Second, new technology

[84] *Feist Publications, Inc. v. Rural Tel. Serv. Co.* [1991] 499 U.S. 340, 349, 111 S.Ct. 1282, 1290, 113 L.Ed.2d 358 ("The primary objective of a copyright is not to reward the labour of authors, but '[t]o promote the Progress of Science and useful Arts. To this end, copyright assures authors the right to their original expression, but encourages others to build freely upon the ideas and information conveyed by a work.")
[85] For a survey of Singapore copyright law in this area, see G Wei, *supra*, n. 14.
[86] J Gurnsey, *Copyright Theft* (Hampshire: AslibGower, 1995) at p.155.

has made it easier to reproduce copyrighted content. Copyright owners, fearing the commercially disastrous potential of perfected piracy allowed by digital technology, have successfully lobbied for stronger, longer, and broader control over access, use, and dissemination of their content.

1. *Trade*

Advanced industrial countries have found copyright to be an area of growing importance. Exploitable ideas have become intellectual capital, and a successful economic future increasingly depends on a superior corpus of new knowledge. Worldwide, there are an estimated 70,000 to 125,000 companies engaged in software and IT services.[87] The international software market value was $370 billion in 2000 with the US holding the dominant market share.[88] Annual US exports in the form of royalties and licensing revenue alone exceeded $37 billion[89] The European market grew by 10.8% in 2000 to €141bn and is estimated that it will be worth €236bn in 2004.[90] Already occupying 24% of the world market, it is growing faster than the markets US and Japan.[91]

Singapore's own copyright-based industries generated $30.5 billion in output and $8.7 billion of value-added services to her economy in 2001.[92] This amounted to 5.7% of her GDP, and is significant as it is close to that of

[87] http://www.wipo.int/ipstats/en/
[88] National Science Board, Science and Engineering Indicators, 2000 (Washington DC, National Science Foundation, 2000)
[89] *Ibid*.
[90] *Ibid*.
[91] http://www.wipo.int/ipstats/en/
[92] N Fang, "Intellectual property's asset potential remains untapped", The Straits Times, 22 January 2005.

mainstream sectors which produced $9.3 billion in value added, amounting to 6% of GDP.[93] The Singapore government has reiterated its commitment to developing Singapore's strong reputation for IP laws,[94] and for promoting high-tech innovation "to ensure the manufacturing sector is supported by strong foundations in technology, top-class infrastructure and science."[95] In turn, corporate juggernauts such as IBM and Microsoft invest heavily in local IT infrastructure.[96] Employees of copyright related industries also make up a significant component of Singapore's workforce, equivalent to 5.7% of the national employment.[97] As a Member of Parliament noted:

> "Singapore's continued economic growth hinges on encouraging and protecting knowledge creation. With globalisation and rapid technological advancement, a strong IP regime will be strategically more important than the traditional strength of geographical location, large domestic market or natural resources in abundance."[98]

While the strengthening of protection has sometimes been explained in terms of legislative convenience, it also suggests that there is at least an implicit

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[93] *Ibid*.

[94] N Aggarwal, 'Focus on IP', The Straits Times, 18 Jan 2005. Singapore's "strong provisions for protection intellectual property rights" was a key for Lucasfilm to set up an animation studio here. This, according to Alan Keith, vice-president for administration, was "a very big deal … (since) George Lucas was free to choose any country in the world." R Miltton, 'Singapore Envoy Hosts Reception for George Lucas' The Straits Times, 4 July 2005.

[95] N Aggarwal, 'A Magnet for Firms and Entrepreneurs', The Straits Times, 17 January 2005. An example of the government's role as a prime mover in the digital market can be seen from its purchase of $2.2 billion worth of computer products and services in 2005, three times more than the $700 million put out in 2004. G Chng, 'Govt. ups IT purchases by tender to $2.2b', The Straits Times, April 29 2005.

[96] Economic Development Board (Singapore), 'IBM strengthens its commitment to Singapore with multi-million dollar investments' (on file with author). For example, IBM has committed to investing $39 million to set up IT infrastructure facilities and offer companies e-business services and IT outsourcing solutions.

[97] Intellectual Property Office of Singapore, 'Copyright Based Industries Boost Singapore's Economy', 27 July 2004. Available at http://www.ipos.gov.sg/main/index.html.

[98] Z Nordin, Singapore Parliamentary Debates, 16 November 2004 at: http://www.parliament.gov.sg:80/reports/public/hansard/title/20041116/20041116_S0004_T0003.html#1.

agenda between owners and lawmakers to maximise returns from copyright protection.[99] The US has been the primary mover of the trend toward stronger rights, and it has acted at two levels. The first level is multilateral. The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) is a direct consequence of technological development and the desire of technologically advanced nations to protect their IPRs abroad, particularly in digital works. [100] Concerns over huge losses sustained by digital industries in the US led it to bring IPRs into its international trade negotiations.[101]

TRIPS represents the high watermark of international consensus on copyright evolution. It extends copyright to computer programs, in source or object code,[102] as well as compilations of data that constitute intellectual creations because of selection or arrangement independently of pre-existing copyright in the material itself.[103] However, further attempts to expand TRIPS level protection

[99] L Bently and B Sherman, *Intellectual Property Law* (Oxford: Oxford University Press, 2001) at p. 42.

[100] Marrakesh Agreement Establishing the World Trade Organization Annex 1C. 33 ILM 81 40 (1994). The TRIPS Agreement contains seven parts. Parts I and II contain the substantive law provisions. Parts III and IV set forth the procedural standards for acquisition and enforcement of IP rights under national law. Part V deals with dispute resolution using World Trade Organisation dispute resolution mechanisms. Part VI provides transitional provisions providing selected groups of nations with additional time to comply with TRIPS. Part VII establishes institutional arrangements at the international level for TRIPS compliance, notably the TRIPS Council.

[101] The fact that existing conventions such as the Paris and Berne did not have effective sanctions and penalties no doubt was an important consideration. See S Ricketson, 'New Wine into Old Bottle: Technological Change and Intellectual Property Rights', (1992) Prometheus Vol. 10 No. 1, at 68. As Jessica Litman explains: "The content industries, copyright owners argued, were among the few in which the United States had a favourable balance of trade. Instead of focusing on American citizens who engaged in unlicensed uses of copyrighted works (many of them legal under US law), they drew Congress's attention to people and businesses in other countries who engaged in similar uses. The United States should make it a top priority, they argued, to beef up domestic copyright law at home, and thus ensure that people in other countries paid for any use of copyrighted works abroad." J Litman, *Digital Copyright*, (New York: Prometheus Books, 2001), at pp.80-1.

[102] Art. 10.1, TRIPS, *supra*, n.43.

[103] Art. 10.2, ibid. TRIPS lays down the minimum level of protection expected from member states, which member states have raised through domestic legislation. Singapore has faithfully incorporated each development in its Copyright Act, *supra*, n.10 conferring exclusive rights to the

were rejected amidst concerns of socio-political disagreements between developed countries and developing ones.[104] This multilateral gridlock did little to deter the US from moving at the second level - that of bilateral free-trade agreements (FTAs). The US-Singapore FTA requires one of the highest levels of IP protection in the world.[105] In addition to obligations to promote anti-circumvention measures and transmission rights,[106] the USSFTA requires Singapore to extend copyright to TRIPS-plus levels of life plus 70 years.[107] While at first glance these measures are certain to increase market optimism, there are doubts that the benefits will last beyond the short run.[108]

2. *Copyright Piracy*

The need to curb piracy is closely related to trade issues.[109] In the UK, some £20 million a year are allegedly lost to copyright theft.[110] Software

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author to the reproduction and making available of literary, artistic and musical works (Section 26), and expanding copyright to computer programs and factual compilations (Section 7).

[104] J Litman, *supra*, n. 44.

[105] For a comprehensive discussion on the specific effects of the US-Singapore FTA on Singapore IP law, see Ng-Loy W L, 'The IP Chapter in the US-Singapore Free Trade Agreement' (2004) 16 SAcLJ 42.

[106]Chapter 12, US-Singapore FTA, available at: http://www.ustr.gov/Trade_Agreements/Bilateral/Singapore_FTA/Section_Index.html In the EU, the Directive on the Harmonisation of certain aspects of Copyright and Related Rights in the Information Society (the "InfoSoc Directive") even the reproduction by private individuals of a Web page for non-commercial purposes, will trigger a compulsory levy. In this respect, the Directive would appear to be providing right holders with an exclusive right to control access to information, the right to read, a sphere copyright has never previously attempted to regulate.

[107] Article 4, USSFTA, codified in Section 28 Copyright Act, *supra*, n.10. At its inception in 1710, the English Statute of Anne conferred copyright protection to the author for 14 years from first publication; but if the author was still living at the end, another 14 was given. (UK Copyright Act 1710, ss. 1 and 2) In 1814, the term of statutory right was extended to 28 years or the author's life, whichever was longer. (UK Copyright Act 1814, s. 4) The Berne requirement of life and 50 years was mirrored the requirements in TRIPS. (TRIPS, Article 12)

[108] H C Jehoram, 'Critical reflections on the Economic Importance of Copyright', (1989) *Rights* 3[1] at pp. 4-7. See also J Gurnsey, *supra*, n.29 at p.161. (Arguing that the US's bilateral approach is selfish and ill-considered, will only be short term, and there should instead be a push for a multilateral approach to intellectual property agreements.)

[109] Piracy is understood broadly to include any situation where the owner is not able to appropriate returns from an expected sale of its work. W R Cornish and D Llewellyn, *Intellectual Property:*

developer Lotus claims to have lost around 160 million US dollars a year.[111] Pirated sales in Singapore reportedly totalled $7 million in 2002.[112] As a Member of Parliament noted:

> "Foreign companies feel comfortable about being able to protect their IP in Singapore and the system offers a tightly policed and regulated environment which discourages piracy and a legal system that offers good support to victims of IP abusers."[113]

Often, it is not the initial technology that stimulates the greatest demand for stronger copyright, but rather the technology of imitation.[114] The greater the difference between initial development costs and those of easy and accurate imitation, the more exigent the case of legal protection needed to preserve domestic export figures. Digital goods require considerable investment to be made, but are often taken over by others quickly, effectively and cheaply. The

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Patents, Copyright, Trademarks and Allied Rights (London: Sweet & Maxwell, 5th Edition, 2003) at p.358 .

[110] 'Apple, Claris and Microsoft research highlights' (1993) FAST News issue 3, p.10

[111] A W Brancomb, 'Who owns Creativity? Property Rights in the Information Age' (1988) 91 Technology Review, pp. 38-45. This correlation is however, highly controversial. As G Hoffman argues. "Perhaps the greatest single misconception that is so frequently observed throughout the literature on the costs of copyright piracy is the idea that a pirated unit of a delivery good implies the loss of the sale of an original unit of the delivery good, and so the cost of copyright piracy can be reliably calculated by an estimate of the number of pirated copies that are circulated. G Hoffman, 'Piracy of Intellectual Property' (1990) 16 Bulletin of the American Society for Information Science, at pp. 9-11. See also F Mannering, "The fact that a consumer purchases a pirate copy at a reduced price does not imply that he would have purchased an original at a higher price had the pirate copy not been available. It is perfectly feasible that the consumer would have simply gone without the good in question than purchasing the original. In fact, it has been observed that only 38% of all pirated copies are in fact lost sales of the original." F. Mannering, 'Assessing the Impacts of Audio Home Copying Restrictions' (1994) Quarterly Journal of Business and Economics 33, at pp.30-41.

[112] S Woo, 'Stop at Three', The Straits Times 10 July 2005

[113] Z Nordin, *supra*, n.41. NB: 'IP abuses' here refer to digital pirates, rather than to owners who abuse their IPRs, whose 'victims' would be rivals and consumers in the competition law context.

[114] The invention of the printing press in the 16th century led copyright owners to claim protection of their copies by book publishers. Over the following centuries, protection was exploded to cover analogous subject matter (engravings, paintings, sculptures, plays and musical compositions) and more recently the products of technological development (sound recordings, cinematograph films, TV and sound broadcasts, live performances, and integrated circuits).

early computer industry was content with contract and secrecy.[115] However, the astonishing ability of digital technology to copy programs and mass consumer markets for pirated content rapidly reversed this perception. Millions of computer users recognised the ease with which software could be copied and exchanged and, inevitably, dubious entrepreneurs who hover at the margins of any successful industry recognised there was a market for illegally copied material that they could all too easily exploit.[116] This makes the case for stronger IPRs hard to resist.

Every roll out of a new technology forces players in the copyright system to find a new point of equilibrium between access to protected works and incentives to create new works. The pressure for increased protection is commonly directed toward the expansion of existing regimes.[117] This is generally easier, from a legislative point of view, than creating a new system. The main attraction of copyright protection is the immediacy and lack of formality in its application. For a product that is invariably dynamic and relatively short lived, the long lead-in time to granting a patent - to say nothing of the disclosure requirements – is clearly unacceptable. Patent protection creates problems for an industry that has developed a great deal of its products by building unashamedly on the work of those who have gone before.[118] Most programs will be 'original',

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[115] J Gurnsey, *supra*, n. 29.

[116] *Ibid*, at p.112. (Noting that copyright piracy that exists is complex and costly, comprising a mix of casual theft and large scale piracy.)

[117] Z Nordin, *supra*, n.41. ("(C)opyright protection has to keep up with the fast paced developments of the IT sector … The proposed amendments are intended to keep our Copyright Act relevant in the digital age.")

[118] J Gurnsey, *supra*, n.29 at p. 111. ("The reason for this can be readily appreciated. If computer programs and associated technology, such as semi-conductor chip design, could be protected under existing regimes, this would greatly lessen the immediate need for a new international convention on protecting the technology… the problem is that whilst copyright … may have been a 'ready made system' in the 1970s, it was not a 'tailor made system' for computer programs.") That is not to say that patents are irrelevant. Computer programs may well be patentable as an invention. Other legal vehicles may also have a role to play in safeguarding computer programs. These

but few will be 'novel' and 'inventive'.[119] It also explains why there is a trend toward database protection, multimedia works, and new forms of electronic distribution, often reacting without having time to contemplate suitable conditions and qualifications.[120]

Given the ease of copying, digital copyright gives software owners exclusive rights over reproduction not found in traditional works, subject to extremely narrow exceptions.[121] This was justified on the basis that the author's reproduction right was fundamental, and the utilitarian basis of copyright law required that the extent of that right not be diminished to ensure that future incentives to create are not stifled.[122] In recent years, copyright law therefore tailored any limitations narrowly while at the same time expanding the scope of protected subject matter.[123]

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include the law of confidential information and the law of contract. However, the focus is on the role played by copyright. Source codes, object codes in ROM chips and documentation are protected as literary works under Section 7(1) of the Copyright Act, *supra*, n.10.

[119] As required for patent protection. See Sections 14-16 of the Singapore Patent Act (Cap 221, 2002 Rev. Edn.).

[120] W R Cornish and D Llewellyn, *supra*, n. 52, at p. 34. Perhaps the best specimen of growth is the EU Database Directive. The EU has moved towards extending protection toward the unoriginal data in databases through broadening its criteria to include those that are protected based on the sufficiency of the investment of labour and resources expended in their creation: the *sui generis* database right. Under this right, database owners can prevent extraction and re-utilisation of the whole or substantial part, evaluated qualitatively and/or quantitatively, of the content of that database. In certain cases they may also prevent the systematic extraction and/or re-utilisation of insubstantial parts. Commentators have noted that this in effect extends protection over the realm of factual information traditionally denied protection by copyright law. Further, the term of protection of the database right is 15 years from the date of completion or from the date it was made available to the public, and renewable if there are sufficient alterations to the database for another term. The provision for a new 15 year term of protection based on any substantial qualitative or quantitative change the contents of the database creates the potential for a database right to last forever. See for a comprehensive summary of the issues, see H A Deveci, 'Databases: Is *Sui Generis* A Stronger Bet than Copyright?' (2004) 12 Int'l J.L. & Info. Tech. 178.

[121] For example, computers work by reproducing data in its volatile Random Access Memory (RAM), which could technically be saved to disk. Copyright lobbyists used this as a premise to argue that each appearance of any portion of software code in a computer program's RAM is an infringement of copyright. This means that owners have the legal right to control access to every appearance of the work in the memory of any computer anywhere.

[122] J Litman, *supra*, n. 44 at p.27.

[123] Right owners have been conferred greater control over the right of communication to include access on demand, and the right of electronic reproduction. This makes all reproductions, however

Today, digital copyright covers functional works such as software, and seems out of character with the traditional categories of literary and artistic works which copyright traditionally protects.[124] Some judges and academics have been critical of expansion of control over technological development through copyright, and are concerned about its anticompetitive threat. Judge Boudin remarked, applying copyright law to computer programs "is like assembling a jigsaw puzzle whose pieces do not quite fit." [125] Gerald Dworkin agreed, arguing, that "the application of copyright to industrial articles is conceptually inappropriate."[126] As will be seen below, given the content attracting contrived copyright protection, this is undoubtedly true, though until something better comes along, legislators will continue adapting copyright to a range of situations for which it was never intended. This convenience, however, has come with a price.

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transient, liable for infringement. In Europe, these are found in the InfoSoc, Directive *supra*, n.49 and EC Directive on the Legal Protection of Computer Programs, Council Directive 91/250, 1991 O.J. (L 122) 42 ('Software Directive'). In Singapore, Section 15(1A) of the Copyright Act, provides that "For the purposes of this Act, reproduction, in relation to any work, includes the making of a copy which is transient or is incidental to some other use of the work." It has not included the equivalent of Article 9(1) into the Copyright Act, *supra*, n.10.

[124] S Ricketson, 'New Wine into Old Bottle: Technological Change and Intellectual Property Rights', (1992) Prometheus Vol. 10 No. 1, at p. 73. (Arguing that sui generis protection offers protective regimes more closely tailored to the needs of the claimant and also take closer account of third party interests.)

[125] *Lotus Dev. Corp. v. Borland Int'l, Inc.*, [1995] 49 F.3d 807 (1st Cir.) at p. 820, (Rejecting Lotus's claim that the emulation interface of Borland's Quattro Pro spreadsheet program infringed Lotus 1-2-3), aff'd by an equally divided Court, [1996] 516 U.S. 233; *Autodesk Inc v. Dyason* (No.2) [1992] 22 IPR 163 ("Functionality is not the proper object of copyright protection.", per Mason C.J.) p. 36

[126] G Dworkin, 'The Nature of Computer Programs', in Lahore J., *et al*, *Information Technology: The Challenge of Copyright* (London: Sweet and Maxwell, 1984) at p.109 (Arguing that while copyright law has "evolved gradually to embrace new forms of unfair competition and to create new kinds of copyright interests", extensions have "been mechanical and scientific methods of enhancing the underlying cultural, literary, dramatic, musical and artistic interests which people traditionally associate with copyright." Computer programs, "which for example, make washing machines work, are far removed from these interests.")

D. *The Price of Copyright*

Digital copyright exists primarily for the functions they perform and not because of any elegance in expression. The consumer is not concerned with the computer coding that make up his program, only whether it works efficiently, effectively and in a user friendly manner.[127] Two important consequences follow the mutation of copyright in functional works. The first is a blurring of the line between copyright and patent rights. A second related outcome is that as technological innovation becomes more dependent on prior work, as well as current developments, strong copyright in digital works may retard the innovation process.

1. *A Copyright Threshold for Patent Rights*

While patents and copyright both give their owners the right to exclude free riders, there are significant differences in the way each is obtained and exercised. It is trite that the difficulty involved in obtaining an IPR is directly proportionate to the strength of that right. Copyright protects original expressions resulting from the creator's myriad choices in the course of constructing the work. It is does not cover "ideas, procedures, methods of operation or mathematical concepts as such".[128] Copyright is intended to stimulate creativity and facilitates

[127] *Computer Edge v. Apple Computer* [1986] FSR 537.
[128] Article 9.2 Berne. Or more familiarly known as the 'idea-expression' dichotomy: see Chapter I, Part II.

dissemination through the royalty mechanism of appropriation.[129] Finally, copyright is readily obtainable once low threshold requirements are met.[130]

In contrast, patent rights provide a complete exclusionary right *par excellence*, granting protection over the *idea* contained in the invention.[131] These rights will be infringed whether or not there was any direct copying. In part, the considerable breadth of patent monopoly is offset by the fact that patents are granted only if an applicant complies with a relatively onerous registration process. Unlike copyright that arises automatically on creation of the work, patents are only granted after the applicant satisfies the requirements for registration.[132] Although the granting process may not be as onerous as some would like, it imposes a significant threshold on the types of inventions that may be patented, [133] the scope of the monopoly granted,[134] and the nature of information disclosed in the patent.[135] Patents are often produced with the intention of being maintained by the inventing party to obtain some market advantage over competitors, in the form of cost savings, or to offset huge

[129] R Watt, *Copyright and Economic Theory: Friends or Foes*, (Cheltenham: Edward Elgar, 2000) at p. 9.
[130] As long as a work (1) has not been copied or parasitically derived, (2) displays a minimal amount of effort, (3) is reduced to material form and imbued (4) has connecting factors of personal status and/or place of first publication, it will be conferred copyright. See G Wei, *supra*, n.14.
[131] For a recent commentary on Singapore patent law, see generally, A Kang, *et al*, *A Guide to Patent Law in Singapore*, (Singapore: Sweet & Maxwell Asia, 2005).
[132] Section 44, Singapore Patent Act, *supra*, n.62.
[133] In the case of patents, protection is expressly conferred on inventions, only if they are inventive, new and industrially useful. See TRIPS Article 27 and Sections 14-16 Singapore Patent Act, *ibid*. Thus while one cannot patent scientific principles, a patent may be obtained for a useful machine that uses those principles for a non-obvious, specific way.
[134] Besides the substantive requirements for patentability, the subject matter should not be contrary to public policy. See Section 13(2) Singapore Patent Act, *ibid*. However, even though third parties may not use the invention without the patentee's permission, they are free to invent around and beyond the field of monopoly conferred on the patentee.
[135] The applicant must publish the invention to the world so that others may exploit them in non-infringing ways. Thus in *Genelabs Diagnostics Pte Ltd v. Institut Pasteur* [2001] 1 SLR 121, the Singapore Court of Appeal held that the disclosure "must not only identify the subject matter of the claim …, it must do so in a way that enables the skilled man to make or obtain it, a kind of enabling disclosure." at p.129.

investment outlays. In contrast, copyright is said to be concerned primarily with encouraging the production of new works.[136]

The corollary of low thresholds for protection in copyright is a narrow delineation of subject matter, generous exceptions, and limitations to facilitate public access to the content. With the extension of copyright into digital works, the broad interpretation of access rights, and enactment of anticircumvention laws, the line between copyrights and patents has been blurred.[137] As George Wei observed:

> "(G)reater overlap of subject matter can arise, and this can result in uncomfortable tensions between the rights. Much of the overlap that does exist in intellectual and industrial property law can be traced to the relentless expansion of copyright in this century resulting in the shadow of copyright being cast over a number of intellectual and industrial property rights." [138]

Copyright today seems more about control than it is about compensation.[139] An arguably unintended result of legislative extension of copyright into functional works to counter digital piracy and promote national trade figures, is that the copyright owner can obtain patent-like right through the back door of a copyright.

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[136] For a classic statement, see A Sterling, *World Copyright Law* (USA: Sweet & Maxwell, 1998), para. 16.06.
[137] For an excellent discussion of this in the US context, see J Litman, *supra,* n. 44 at p. 80.
[137] W Landes and R A Posner, *supra,* n. 18.
[138] G Wei, *supra* n. 14.
[139] N Elkin-Koren, 'It's All About Control: Copyright and Market Power in the Information Society' (7/00 draft) cited in J Litman, *supra,* n.44, at p. 80.

2. *Retarding Innovation*

Traditionally, the innovation process occurs in linear, sequential stages, from research to development, design production and finally marketing, sales and service.[140] This is illustrated in **Fig. 2** below. In this serial model of innovation, little incremental innovation follows the initial breakthrough. There is no feedback or overlap between and among stages.[141] In the copyright context, the owner of copyright on a book may be able to control whether it should be adapted into a movie. However, once the movie is made, it may not control how its soundtrack or visual effects should be produced, or control its merchandising.

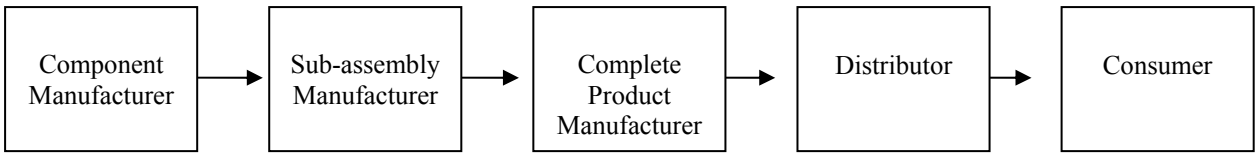

Fig. 2: A traditional value chain, where innovation is linear.

However, this model does not address the innovation processes at the heart of technological change in digital markets.[142] In these markets, the innovation process is radical and involves significant vertical and horizontal interdependencies, with tight linkages and feedback among and between the various stages. [143] Innovation takes place simultaneously at each level, as seen in **Fig. 3**. For example, software products increasingly combine elements from previous solutions. Where copyright is granted to interdependent functional

[140] J Tirole, *The Theory of Industrial Organisation*, (Boston: MIT Press, 1988) at p. 389.
[141] Unlike the model of simultaneous innovation discussed below.
[142] For a detailed and insightful discussion of how costs affect market structure in 'traditional' and R&D intensive industries, see J Sutton, *Sunk Costs and Market Structure* (Cambridge: MIT Press, 1991).
[143] T M Jorde and D J Teece, 'Innovation Co-operation and Antitrust' in T M Jorde and D J Teece eds., *Antitrust, Innovation and Competitiveness* (XX: New York, 1992) at pp. 48-50. B A Kemp, 'The Follow-on Development Process v. the Conventional Patent Protection Concept', (1974) 16 IDEA 31; R R Nelson, 'Intellectual Property Protection for Cumulative Systems Technology', (1994) 94 Colum.L. Rev. 2674.

interfaces, their owners will not merely be able to exert control on their independent production process, as was the case with the linear model of innovation. Instead, it will have control over the development of complements and substitutes that require access to interface with the standard. Further, with this model of simultaneous innovation, the quickest copyright owner will control the technological development dependent on its standard, even if its own initial contribution to the utilitarian balance was minimal.[144] It thus extracts the maximum value from pre-existing research while contributing little to future progress.

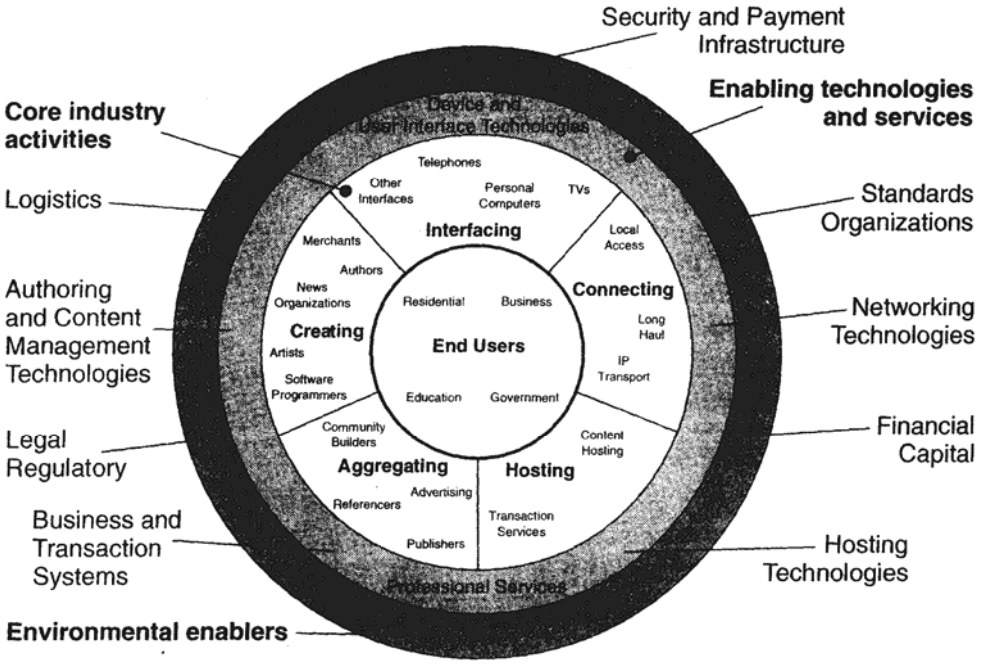

Fig. 3: A Network Based Value Chain showing simultaneous innovation
Source: CONRINET http://www.echo2.lu/condrinet

[144] M A Heller and R S Eisenberg, 'Can Patents Deter Innovation? The Anticommons in Biomedical Research', Science, (1998) Vol. 280 No. 5364 at p. 698.

It is important to understand that the relationship between copyright protection and innovation is not monotonic.[145] Whatever the merits of extending copyright protection to digital works, enhancing protection has diminishing marginal benefits, and at some point will cause a net negative impact on innovation, as the strengthening of existing rights stifles more new innovation which builds on those rights than that which further expansion encourages. Thus, the relationship between the two resembles an inverted 'U'. In network economies, refusals to license may prevent consumers benefiting from network effects accruing to a new standard and impede the function of this 'circular' model of innovation.

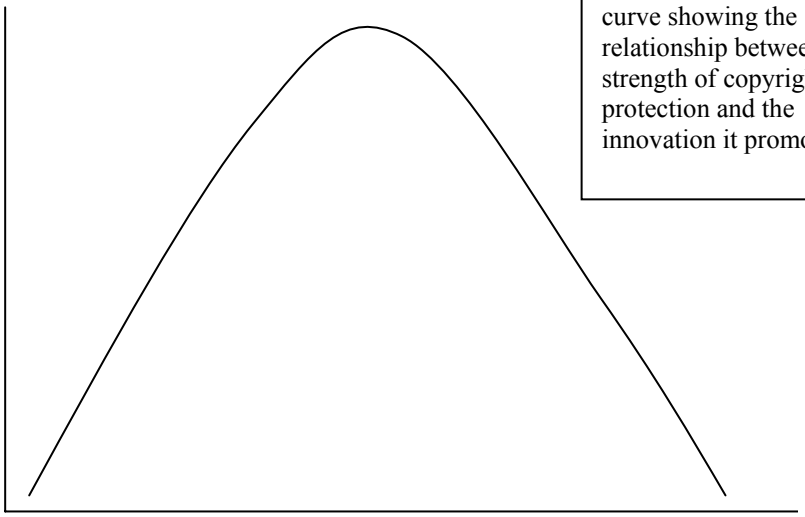

Fig. 4: An inverted 'U' curve showing the relationship between the strength of copyright protection and the innovation it promotes.

[145] A failure to acknowledge this limit is one of the flaws in Polk Wagner's recent argument that there is no reason to worry about ever-increasing control over intellectual property. R P Wagner, *Information Wants to be Free: Intellectual Property and the Mythologies of Control*, (2003)103 Colum. L. Rev. 995. Wagner argues that since control over intellectual property is imperfect, increasing intellectual property rights will encourage new creation that will have spillover benefits to the public. While this is certainly true up to a point, beyond a certain level of control the costs of marginal increases in control outweigh any such benefits. Wagner simply assumes that point has not been reached. It is submitted that there is substantial evidence to the contrary.

In essence, the digital copyright owner today not only has a state sanctioned right over the competitive process, but also the rate of innovation. After all, the corollary of the copyright owner receiving greater control over its content is the ability to restrict the access of third parties to it.[146] If digital copyright has expanded beyond the utilitarian bargain,[147] what is the solution? Compelling arguments have been made that any imbalance should be corrected by endogenous changes rather than shifting the balance through an application of competition law. As Michael Katz puts it:

> "Even if one concludes that someone should engage in fine turning IPRs to reflect competitive conditions or other market characteristics, that someone need not be a competition policy authority. Present antitrust laws and enforcement institutions have not been created with this role in mind. Moreover, co-ordination with the PTO[148] is essential to implementation of a sound overall policy. Absent legislation, using antitrust policy to fine tune IP laws would very likely create more problems than it would solve."[149]

The presumption is therefore against exogenous remedies. After all, it may be argued that hundreds of years have been spent developing a sophisticated endogenous machinery to ensure a 'proper' balance between the owner and the

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[146] W Landes and R A Posner, *supra*, n. 18 at p.326, See also A Thierer and W Crews eds., *Copyfights: The Future of Intellectual Property in the Information Age* (Washington: Cato Institute, 2002) (presenting various authors debating over, inter alia, how intellectual property law should be revised to meet the unique conditions of the 'digital' or 'information' age and the proper scope and subject matter of patent law).

[147] See Chapter I, Part II.

[148] This refers to the US Patent and Trademark Office.

[149] M L Katz, 'Intellectual Property Rights and Antitrust Policy: Four Principles for a Complex World' (2002) Vol. 1 Issue 1 Jour. Tele. & High Tec. Law 325 at 328-9. As Richard Posner argued: "It is not a violation of (antitrust laws) to acquire a monopoly by lawful means, and those means include innovations protected by intellectual property laws. If copyright protection of software is too broad (either because too much intellectual property protection can reduce output or because… too much innovation can be inefficient), it is a matter to take up with Congress." R A Posner, *Antitrust Law*, 2nd Edn, (Chicago: University of Chicago Press, 2001), at p. 250. See also, B Ong, 'Anti Competitive Refusals to Grant Copyright Licences: Reflections on the IMS Saga' (2004) EIPR. 26(11) 505 at p.508 (Arguing that copyright law can remedy anti-competitive refusal to license through (1) "tinkering with the rules on the eligibility of the subject-matter for copyright protection", (2) "the nature and scope of the copyright owner's exclusive rights", (3) "the availability of compulsory licences to would-be competitors of the copyright owner".)

public.[150] As the OECD broadly declared, "Any intrusion by competition law, particularly into the owner's exclusive right in refusing to license its IPR after it has been legitimately obtained would discourage innovation."[151]

These arguments are valid to the extent that copyright is capable of endogenously controlling anticompetitive abuse, if they are not, they should be capable of being fine-tuned to meet the challenge. This means not just the technical possibility of doing so, but the political will to do so as well – something that will not be easy, given the belligerent opposition copyright industries will likely marshal against any such attempts.

III. THE INSUFFICIENCY OF INTERNAL REGULATION

Two categories of people commonly turn to three avenues for relief against abuses of copyright. The first are those who seek access to copyrighted content. The second are those who have successfully accessed that content but are sued for infringement. The avenues for relief are as follows. First, a court may make a find of non-infringement. This either may be because the infringer attempted to access unprotectable information through reverse engineering, or because the information was copyrighted, but the law found that technical

[150] Copyright law protects only works of expression, excluding facts and ideas; the fair use doctrine, often referred to as a "safety valve," protects against cases in which the routine application of copyright law would unduly restrict public access to the work; and the Copyright Act contains compulsory licensing provisions. Trademark law provides no protection for generic marks or, with some qualification, descriptive marks. (stating that registered marks that become generic terms are subject to cancellation at any time); (stating that descriptive marks may only be registered provided they have acquired secondary meaning). Patent law provides no protection for fundamental principles or for laws of nature. See D I Bainbridge, *Intellectual Property*, (5th Edition) (Essex: Longman, 2002) at 13.

[151] Organisation for Economic Development Directorate for Financial, Fiscal and Enterprise Affairs, Committee (OECD) on Competition Law and Policy, Competition Policy and Intellectual Property Rights Executive Summary (1998) at p.8.

necessity justified access. Second, a court may allow alleged infringers to raise an equitable shield of copyright misuse. This is a unique invention of US jurisprudence. The owner's action is barred by its unjust conduct in attempting to enforce its rights beyond the bounds of its statutory grant. The court, while finding infringement, nonetheless holds that the owner deserves no remedy. As a third recourse, third parties unable to access content to begin with may plead that they fall within the recognised categories giving them recourse to compulsory licensing.

A. *The Idea-Expression Dichotomy*

TRIPS unequivocally states "copyright protection shall extend to expressions and not to *ideas, procedures, methods of operation or mathematical concepts as such*."[152] This principle is unanimously accepted in the US,[153] EU [154]and Singapore.[155] In this way, copyright distinguishes between proprietary information and 'information commons' in digital works. While access to the former may be controlled by the copyright owner, the latter requires the owner to grant access under certain conditions.[156] Two practical manifestations of these

[152] TRIPS, *supra*, n. 42, Article 9.2.
[153] USC 102(b): "In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work ."; See *Feist Publications, Inc. v. Rural Telephone Service Co*, *supra*, n. 27.
[154] Software Directive, *supra*, n. 59, Recital 13.
[155] *Robert John Powers School Inc v Tessensohn*, *supra*, n.10.
[156] The test, according to the Court in *Wheelan v. Jaslow*, [1987] FSR 1 (C.Apps. 3d. Circ) was that "the purpose or function of a utilitarian work would be the work's idea and everything that is not necessary to that purpose or function would be part of the expression of the idea." This was elaborated on in *Computer Associates v. Altai* [1992] 982 F.2d 693 (2d Cir.) which held that elements taken from the public domain and elements dictated by efficacy and external factors, where expression must be regarded as confounded into ideas, as falling outside the core of protectable expression. For an approving view see A L Clapes, and J M Daniels, 'Some Perspectives on the "Controversy" Over the Computer Associates Test for Copyright Infringement', (1993) 9 Computer Law 11. For a disapproving view, see *Ibcos Computers v.*

principles have emerged with regard to digital copyright. The first is that access to the work's underlying ideas through reverse engineering should be unobjectionable. The second is where technical efficacy or market necessity dictates copying.[157]

1. *Reverse Engineering*

The debate arising from reverse engineering deserves a dissertation of its own.[158] Suffice to say that copyright owners have claimed it is necessary to object to reverse engineering as it involved straightforward copying.[159] This was met with a riposte from their opponents who argued that other copyrighted works could be consulted and drawn upon to follow instructions to make other works, as

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Barclays Mercantile [1994] FSR 275, where Jacob J. held that British copyright law did not demand a search for a "core of protectable expression", and rejected the concept of "merger" of expressions into ideas. See also B Abramson, 'Promoting Innovation In The Software Industry: A First Principles Approach To Intellectual Property Reform', (2002) 8 B.U. J. Sci. & Tech. L. 75.

[157] *Altai*, *ibid*, following the classic decision of Judge Learned Hand in *Nichols v. Universal Pictures Corp* [1930] 45 F.2d 119 (2d Cir.) The Court took Judge Hand's analysis of a play and applied it to software. In *Nichols*, Judge Hand sought a way of describing how copyright would, and would not, be applied to the non-literal copying of a literary work: "Upon any work, and especially upon a play, a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may perhaps be no more than the most general statement of what the play is about, and at times might consist only of its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his 'ideas,' to which, apart from their expression, his property is never extended." Judge Hand's point was that at some level of abstraction, copyright protection ceased as expression and was transformed into an unprotectable idea. *Altai* used this "abstraction" approach to craft an "abstraction-filtration-comparison" test. Under this test, a computer program is examined at each level of abstraction for unprotectable elements: The objective, at each level of abstraction, is deemed to be an unprotectable idea. Also at each level, unprotectable elements include: scenes a faire, i.e., stock modules and other programmatic elements used in the trade, techniques which are required by hardware or other external constraints, and patterns which are required by efficiency considerations. All of these unprotectable elements are then filtered out. What is left--after filtering at each level of abstraction--is protected. This residue is then compared with the suspect program to determine whether unlawful copying has occurred.

[158] See Annex D (Reverse Engineering) for a brief explanation of the technical and legal issues.

[159] A R Miller, 'Copyright Protection for Computer Programs, Databases, and Computer Generated Works: Is Anything New Since CONTU?', (1993) 106 Harvard Law Review 977

long as the results were themselves non-infringing.[160] It was therefore only because of the peculiarity of computer technology that a single copy had to be made before the step of consultation could take place. Although legislation shows that this debate has largely been settled in favour of access over the use of copyright law to preclude competition, it is not without its critical failings.

In the US, reverse engineering has developed under its fair use exception. Access to copyrighted content is allowed to the extent that the amount copied was no more than was necessary to achieve interoperability.[161] Under the doctrine of 'transformative use', it is allowed even to design rival products that diverted revenue away from the copyright holders, as long as they were free of the owner's copied code.[162] This is because the owner's interests in appropriating have been incorporated in fair use analysis. Thus, any adverse market impact did not preclude the application of reverse engineering.[163]

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[160] D Karjala, 'Copyright Protection of Computer Software, Reverse Engineering and Professor Miller' (1994) 19. U. Dayton LR 975; T Vinje, 'Threat to Reverse Engineering Practices Overstated - *Stac Electronics v. Microsoft Corporation*' (1994) 8 EIPR 364.

[161] 17 U.S.C. § 102(b). In *Sega Enterprises v. Accolade, Inc*., [1992] 977 F.2d 1510 (9th Cir.) Although Accolade had copied the whole of Sega's programs in the course of its reverse engineering, the court discounted this conduct because it occurred in an intermediate stage of Accolade's software development process. Although the court recognized that Accolade's games affected the market for Sega games, they did not do so in a way about which copyright law is concerned. Significantly, it allowed decompilation to prevent Sega from having a de facto monopoly over the unprotected ideas and functional concepts in the program, and held that to get a monopoly on such ideas and functional concepts, a creator needs to seek patent protection. (at 1523-7)

[162] Intermediate copying that occurred was legitimate, because it merely facilitated the copying of the unprotected function or idea of the software, and where it is used to facilitate the making of transformative (better or extended) products See *Sony Computer Entertainment, Inc. v. Connectix Corp* [2000] 203 F.3d 596 (9th Cir.). "[I]n the case of computer programs the idea/expression distinction poses distinct 'unique problems' because computer programs are in essence 'utilitarian articles - articles that accomplish tasks. As such they contain many logical, structural and visual display elements that are dictated by the function to be performed, by considerations of efficiency, or by external factors such as compatibility requirements and industry demands' ... the fair use doctrine preserves public access to the ideas and functional elements embedded in copyrighted computer software programs." At 602-3

[163] D J Gifford, 'Developing Models for a Coherent Treatment of Standard-Setting Issues Under the Patent, Copyright, and Antitrust Laws' (2003) 43 IDEA 331

In the EU, copyright protects a work against the competition of copies, but not against competition from works that are non-infringing copies. It is fair use so long as the defendant's final product does not contain a substantial amount of copied material. EU law allows reverse engineering a program to achieve interoperability, where:

(i) The information must not be used for any other purpose, in particular
in a program which infringes the original decompiled program, and must not be supplied to another person for a different purpose
(ii) The lawful user must not have the necessary information "readily available" to him
(iii) The lawful user must not decompile more than necessary to achieve interoperability. [164]

The law on reverse engineering in Singapore is in a state of flux. In the landmark case of *Creative Technologies v. Aztech Systems Pte Ltd*,[165] the Court of Appeal effectively held that allowing reverse engineering for commercial purposes did not exist under Singapore copyright law.[166] Under the fair dealing defence offered by Section 35, the fact that the defendant was seeking to make a compatible or interoperable program was irrelevant even if the ultimate product

[164] Article 6, EU Software Directive, *supra*, n.59, Article 6 of the Directive provides that copying and adaptation occurring in the decompilation of software code is permitted where it is "indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs". The problem is that (ii) occurs only where the details of technical interfaces have been published. This begs the question of who would wish to engage in the tedious process of decompilation if this were so, and therefore hints of redundancy. The problem with (iii) is that where interface structures are scrupulously hidden, the entire program may have to be decompiled. It is an open question whether the decompiler is fishing for other things using interoperability as a pretext. See *Pro Sieben v. Carlton UK TV* [1999] EMLR 109.

[165] [1997] 1 SLR 621. Specifically it held that fair dealing provisions did not cover private study for commercial purposes. It also held that the adjective "private" before "study" had the effect of confining the defence to individuals actually performing the study.

[166] For excellent articles on this landmark case, see Ng-Loy W L, 'Legitimizing Reverse Engineering of Computer Programs in Copyright Law - How Far Have We Gone in Singapore?", International Journal of Law and Information Technology, (1996) Vol. 4 Issue 1: Spring 6, pp. 48-64; D Seng, 'Reviewing the Defence of Fair Dealing for Research or Private Study' (1996) SJLS 136; S Lai, 'Recent Developments in Copyright Protection and Software Reverse Engineering in Singapore: A Triumph for the Ultra Protectionists?' (1997) 19 EIPR 525.

was itself non-infringing. However, developments in the EU and US led the Singapore Parliament to legislate away the statutory bar previously prohibiting commercial reverse engineering. [167] The intent was to allow the defence of fair dealing for commercial research, promoting reverse engineering for commercial purposes.[168]

More recently, Sections 39A-C were added, and provide for reverse engineering. The result is a two-tiered provision for reverse engineering: the first under the specific heads of Sections 39A-C, and the second tier of general fair dealing under Section 35 may still provide relief from an infringement action.[169] The introduction of Sections 39A-C into Singapore copyright law also allows the possibility of adopting the US concept of "transformative use".[170] This would be a welcome development for restoring the utilitarian balance. Transformative use sanctions access to copyright content only where it adds value to the original work. It does not reduce market competition.[171]

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[167] For a commentary, see L Lim, "The Aftermath of *Creative v Aztech*: Fait Accompli or Fiasco?" (1998) 10 SAcLJ 414. The Copyright (Amendment) Act 1998 deleted Section 35(5) on private study completely.

[168] Explanatory statement to the Copyright Amendment Bill 1998. See S222/98. Note however, that the copyist would still have to show that the dealing was "fair". This rests upon the nature of the work, the amount taken and the effect of the dealing upon the potential market for or value of the work or adaptation.

[169] This is confirmed by Section 39A(4), which provides that "(f)or the avoidance of doubt, this section is without prejudice to the generality of section 35 and does not limit the operation of that section."

[170] *Sony Computer Entertainment, Inc*, *supra*, n.105.

[171] As George Wei noted in the context of the *Creative case*: "The transformative use in the *Aztech* case did not reduce competition: it directly created it although the public could be said to have benefited from the competition." G Wei, *supra*, n.14, at p.1255. It has been cogently argued that under the new reverse engineering provisions, the right of "decompilation" is strictured with too many preconditions. In addition, many of these pre-conditions are unclear or ambiguous, making it unlikely that a reverse engineer can fully comply with them in good faith. Further, where decompilation is not with a view to interoperability, or where the preconditions cannot be satisfied, reliance must be had to section 35 of the *Copyright Act*, as a form of fair dealing. This lack of clarity and utility in the new reverse engineering exceptions may in fact discourage reverse engineering. See D Seng, 'Reverse Engineering The New Reverse Engineering Provisions in the Copyright (Amendment) Act 2004', (2005) SJLS 234

It is important to recognise that despite the inroads made by these developments, reverse engineering is difficult and costly, and its results uncertain. Simple or unpopular systems raise little issue with rivals - they are either easily accessed or not worth the trouble. Most access issues hover around commercially successful platforms such as Microsoft's Windows OS, which for a variety of legal and technical reasons has proven impossible to reverse engineer.[172]

Even if access was possible, third party developers still face a second hurdle: anticircumvention legislation. Initiated in the US, copyright owners argued that in a digital age, anyone with access to their works could commit massive violations of their copyrights with a single keystroke by transmitting unauthorised copies all over the Internet. [173] To preserve the sanctity of their rights, owners insisted on being entitled to having some degree of control over access to their works. This meant not merely initial access, but continuing control over every subsequent act of gaining access to the content of the work. To protect their property rights, the law needed to be amended to prohibit individuals from unauthorised access to copyrighted works. A compliant US Congress thereby

[172] *United States v. Microsoft Corp*., [1999] 65 F. Supp. 2d 1, 15 (D.D.C.) (suggesting that process of reverse engineering Windows is so time consuming that it could not be done successfully); M A Lemley and D McGowan, 'Legal Implications of Network Economic Effects', (1988) 86 Calif. L. Rev. 479, 527-530, discussing why no one has been able to reverse engineer the Windows operating system to produce a compatible version. For example, rivals seeking to examine the proprietary interface will have to use complicated clean room procedures to prevent anything but information about the ultimate function of the IPR to move between two groups of engineers in order to avoid infringement suits. However, the IPR owner may still challenge the claim, accusing the engineers of direct copying. This leads to wasteful duplication of efforts and litigation over the existence and effectiveness of these 'Chinese walls'. The copier must be able to show a detailed paper trail. See A Johnson-Laird 'Software Reverse Engineering In The Real World', (1994) 19 U. Dayton L. Rev. 843

[173] J C Ginsburg, 'Essay: From Having Copies to Experiencing works: the Development of an Access Right in US Copyright Law', in H Hansen, ed. *US Intellectual Property: Law and Policy* (Sweet & Maxwell, 2000).

passed the Digital Millennium Copyright Act (DMCA). [174] The EU[175] and Singapore[176] have followed suit with anticircumvention legislation of their own.

The DMCA's chilling effect on reverse engineering may be best seen in the infamous *DeCess* case. [177] Copyright owners brought an action against a teenage hacker for circumventing a technological protection measure in the form of a software 'lock' employed to prevent the copying of DVDs. The Court held that while the DMCA recognised reverse engineering, the doctrine developed under common law[178] did not apply where it was done to the lock itself in order to access the uncopyrightable ideas. In this way, while the uncopyrightable ideas were still in theory made available under reverse engineering doctrine, the act of circumventing the 'lock' preventing access brought the facts of the case outside the doctrine's defensive perimeters. Accordingly, the hacker was found to have violated the relevant provision in the DMCA.[179] The fact that reverse engineering of the software lock was both ancillary and necessary to achieving the same effect as legitimate reverse engineering doctrine was irrelevant.[180] The effect of *DeCess*

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[174] 17 USC 1201

[175] EU Copyright Directive, Directive 2001/29/EC of 21 May 2001.

[176] In accordance with the US-Singapore FTA, Singapore has similar provisions in her Copyright Act. See Sections 261B-G, *supra*, n.4. In particular, Section 261C of the Copyright Act prohibits the circumvention of technological measures designed to restrict access to a work, and make it illegal to make or distribute any tool or service designed to facilitate circumvention. This amounts to a criminal offence liable to a fine of up to $20,000 and imprisonment of up to 2 years. See also similar provisions in the EU InfoSoc Directive. As S. Jayakumar, Minister for Law explained "Copyright owners should reasonably expect their efforts in employing such measures to protect their works from infringement not to be thwarted and not to have those technological measures circumvented." Singapore Parliamentary Debates, 16 November 2004 at, *supra*, n.17 Whether Sections 35 and 39A-C will be eroded by Section 261C remains an open question at the time of writing.

[177] *Universal Studies v. Reimerdes*, [2000] 82 F. Supp. 2d at 214

[178] *Sega Enterprises Ltd.*, *supra* .n.107; *Sony*, *supra*, n.108.

[179] Section 1201 permitted reverse engineering of copyrighted computer programs only and did not authorize circumvention of technological systems that control access to other copyrighted works.

[180] In a deathblow to the 'transformative use doctrine' developed in *Sony*, the Court held that "*Sony* involved a construction of the Copyright Act that has been overruled by the later enactment of the DMCA to the extent of any inconsistency between Sony and the new statute. … By prohibiting the provision of circumvention technology, the DMCA fundamentally altered the landscape. A given

is graphically represented in **Fig. 5**.

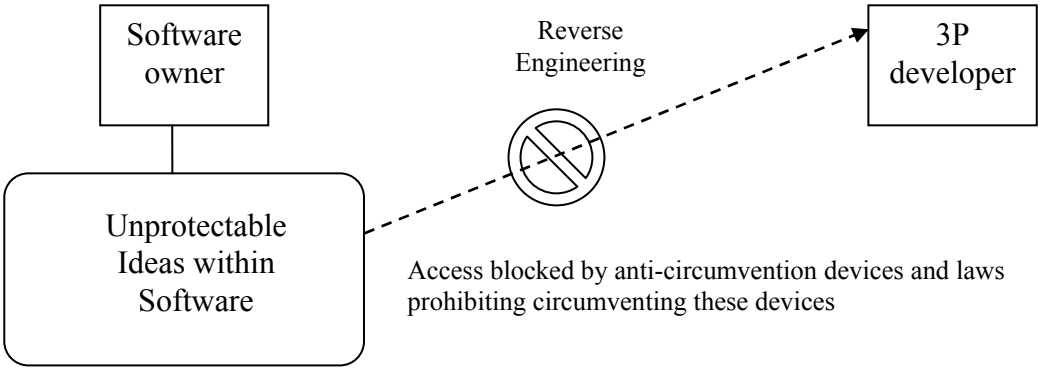

Fig. 5: Third party developers unable to access unprotectable ideas through reverse engineering following *DeCess*; thus unable to provide substitutes or complementary products which depend on interoperability with the industry standard.

The legal status of reverse engineering shapes the nature of competition and innovation in information platforms by providing a statutory license to copyright content. Legitimate access under reverse engineering creates an incentive for owners to license their content. They could charge an amount less than the cost of reverse engineering, and appropriate a profit in the process. However, cases like *DeCess* encourage copyright owners to use anti-circumvention devices to complementarily regulate access and its use. This makes perfect commercial sense for the owner, but none for the public. If copyright owners can impose conditions on the act of gaining access, and back those conditions up with either technological devices, or legal prohibitions, or both, then the promise of access via reverse engineering would be illusory. Cases like *DeCess* will doubtless encourage restricting access through digital rights management.

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device or piece of technology might have 'a substantial non-infringing use', and hence be immune from attack under *Sony's* construction of the Copyright Act … but nonetheless still be subject to suppression under Section 1201". *Reimerdes*, *ibid*.

Even if the codes required for software interoperability were not blocked by anti-circumvention devices, by introducing frequent updates, the copyright owner may nonetheless render those codes obsolete.[181] Alternatively, owners may also turn to trade secrets even where copyright or patent protection is unavailable.[182] The initial decision to exclude software from patentability reflected a widespread view in the early computer industry and amongst researchers in the field that protection over digital 'ideas' was undesirable for competition and innovation.[183] However, over the last decade, there has been growing trend where dominant undertakings in the computer industry underpin all their other IP in the field with patents. Globally, the movement has been powered particularly by the readiness of the US Patent Office to allow patents for computer programs and other functional works.

Not content to be left behind, Europe followed suit. The European Commission has taken steps toward the position that while copyright protected expression of programs in source and object code, patents could protect fundamental programming techniques.[184] It justifies this expansion using the

[181] Microsoft regularly changes its operating system. It has upgraded its operating system software on a regular basis over the last 15 years and on several occasions has introduced an entire new generation of operating system, despite the difficulty of migrating the installed base of users from an old program to a new (albeit compatible) one. A competitor would have to reverse engineer each new program and alter its own program to maintain compatibility with the new generation Microsoft product. M A Lemley and D McGowan *supra*, n.119 at p.529. Apple has also warned customers of Real using software which currently allows unauthorised interoperability with its iPod players that "it is highly likely that Real's Harmony technology will cease to work with current and future iPods". J Wrostad, Apple Accuses RealNetworks of Hacker Tactics in Tiff over iPod, Newsfactor Technology News www.newsfactor.com/story.xhtml?story_id=26086.
[182] *Gates Rubber Co. v. Bando Chemical Industries, Ltd*., [1993] 9 F.3d 823 (10th Cir.)
[183] K Beresford, *Patenting Software under the EPC* (London: Sweet & Maxwell, 2000).
[184] Draft Directive to Harmonise National Law on the Patentability of Computer Programs. 2002/0047/COD

TRIPS requirement to extend patents to "all fields of technology".[185] The onus then seems to be on those who object to copyright extensions to prove their case. This was echoed when the Singapore Patent Act was amended to delete Section 13(2), which contained a prohibition excluding from patentability certain types of subject matter, in particular, software.[186]

Today, 15% of all patents are software patents,[187] a number of them are patents that govern APIs and similar interface technology.[188] Coupled with refusals to license, software patents may create firewalls in a communal environment of technological innovation.[189] While Singapore has not expressed a position with regard to software patents, it has been vigilant in allowing patents in other controversial areas such as biotechnology.[190] There is therefore little doubt that the economic impetus that had driven it to mimic the West in extending copyright to digital works will encourage also local software patents in the near future.

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[185] Article 27. W R Cornish and D Llewelyn, *supra,* n.52 at p.780. (Noting the EPO amended its Guidelines o allow claims involving a program if overall the invention made a contribution to an art that was technical.) For example in *Koch and Strezel* EPO T26/86, a patent was granted for a program governing the operation of an X-ray apparatus controlled by a computer program so as to secure optimal exposure without overloading it. It was sufficient that "technical means" were involved as well as the mathematical method or algorithm, which was characterised as "non-technical". It was unnecessary to show that the invention lay exclusively or largely in the technical, rather than the non-technical domain. Another groundbreaking case was *Viacom's Application*, [1987] OJ EPO 14 where a patent was granted for a computer operating program because the claim went to the general functioning of the computer, rather than to an application designed to execute particular tasks. Further inroads have even allowed software underpinning business methods to be patented as a convenient alternative. *T 931/95 – Pension System*

[186] See A Kang, *et al*, *supra* n.74, at p. 68.

[187] D W Carlton and J M Perloff, *supra,* n. 22 at p.565

[188] Examples include U.S. Patent No. 5,590,347, for a "[m]ethod and system for specifying alternate behavior of a software system using alternate behavior indicia"; U.S. Patent No. 5,437,006, for a "[s] spreadsheet command/function capability from a dynamic-link library"; and U.S. Patent No. 5,430,878, for a "[m]ethod for revising a program to obtain compatibility with a computer configuration."

[189] W R Cornish and D Llewelyn, *supra,* n.52 at p.780.

[190] G Wei, *An Introduction to Genetic Engineering, Life Sciences and the Law*, (Singapore University Press: Singapore, 2002)

2. *Technical Necessity*

Copyright law recognises that where there are very limited ways to express a writer's idea, copyrightable expression becomes unprotectable.[191]In *Lotus Development Corp v. Borland International Inc*,[192] the Court held that the menu system of Lotus 1-2-3 was a method of operation not protected by copyright. It served as a method by which the underlying software was operated and controlled.[193] The policy underlying this exclusion was drawn from the utilitarian mandate to encourage subsequent authors to build upon the efforts of their predecessors.[194]

The court was also influenced by the fact that the menu commands used in Lotus had become an "industry standard" in the market for computer spreadsheet programs. It would therefore have been undesirable if copyright could be acquired, and asserted, in a way that would compel the many software users who were familiar with the Lotus menu commands to learn different commands for

[191] US copyright law explicitly denies copyright protection to any 'idea, procedure, process, system method of operation, concept, principle or discovery…' 17 U.S.C. §102(b), see Annex A for full text. Programmers may be constrained by functional and compatibility requirements to a limited number of ways of writing the program. Digital copyright law has accordingly recognised that interface code may also be unprotectable. The WCT states in Article 2 that copyright protection extends to expression and not ideas, procedures, methods of operation or mathematical concepts as such. Article 1(2) Of the EU Software Directive, *supra*, n. 59, states that ideas and principles which underline any element of a computer program are not protected under the Directive. Article 6 of the Software Directive, *supra*, n.59, excludes copyright protection for elements and acts necessary to achieve interoperability. Similarly, industrial designs protection elements technically necessary to make a compatible product are not protected. See also Art 7.1 Directive 98/71/EC of the European Parliament and of the Council of 13 Oct 1998 on legal protection of designs: A design right shall not subsist in features of appearance of a product which are solely dictated by its technical function. No equivalent provisions are found in Singapore.

[192] [1995] 49 F.3d 807 (1st Cir.).

[193] *Ibid*, at p. 818. Even though expressive choices had been made by Lotus in choosing and arranging the menu commands, this expression was not copyrightable because the specific words chosen were necessarily part of a "method of operation"

[194] See Chapter I, Part II.

different spreadsheet programs.[195] The court was concerned with customers being 'locked into' the Lotus system, such that the cost for customers to change their practices may be so high that they are not likely to buy a competing product that even when it might be commercially superior.[196] By allowing Borland to replicate the Lotus interface, customers could opt for the superior product, thus promoting competition via substitution. In essence, while the computer program may have deserved copyright protection, the owner had no basis to impede competition by imposing unnecessary learning costs upon consumers.

While it may be tempting to facilitate the development of compatible interfaces through the reasoning in *Lotus*, extending its ambit too widely could rob designers of any real protection from copying, since it effectively places user interfaces into the public domain. Customers may benefit in the short run by having an option between two similar software interfaces. However, this grossly discounts the projected investment returns that induce interface developers' future entry or further improvements to the interface, since some users may opt for the alternative program instead.

Lotus may also be criticised as too blunt in its application by access without clear evidence of consumer harm. Under competition law, there is no general obligation to make compatible products or facilitate their creation.[197]

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[195] Boudin J observed: "If Lotus is granted a monopoly on this pattern users who have learned the command structure of Lotus 1-2-3 or devised their own macros are locked into Lotus, just as a typist who has learned the QWERTY keyboard would be the captive of anyone who had a monopoly on the production of such a keyboard." *Ibid*, at 821

[196] W A Sheramata, 'Barriers to Innovation: A Monopoly, Network Externalities and the Speed of Innovation' (1997) Antitrust Bulletin 937, at 955. See discussion in Chapter III, Part IV for further discussion of this issue.

[197] *US v. Microsoft Corp*, 253 F 3d 34 64, at 64 (DC Cir 2001) ('A monopoly does not violate the antitrust laws simply by developing a product that is incompatible with those of its rivals.')

Lotus shifts the burden of proof to the defendant, creating a presumption of harm unless the owner can show otherwise. This turns the presumption of innocence fundamental to natural justice on its head.[198] In this regard, *Lotus* may have taken a step too far in favour of public access. Platform owners would often be glad to license or cross license interface information to strengthen network externalities amongst its users. In these cases, courts should be astute to defendants pleading 'technically necessary' to provide substitutes, rather than complementary products.

3. *Evaluation*

Digital works are essentially utilitarian rather than literary or artistic. As such they contain many logical, structural and visual display elements that are dictated by the function, efficiency, or external factors such as compatibility requirements and industry demands. This makes the boundary between idea and expression extremely difficult to draw under copyright law. [199] It is clear that competition law will intervene to mandate compulsory licensing where copyright covering functional content affects competition. In *Magill*,[200] Magill TV Guides sought to publish a weekly guide to all television programming on the channels then broadcasting in Ireland. At that time, three companies were broadcasting in the Irish market, and each published its own weekly guide. The broadcasting

[198]See generally, W Wade and C Forsyth, *Administrative Law*, (Oxford: Oxford University Press, 2004).
[199] In *Nicols v. Universal Pictures Corporation* [1930], 45 F. 2d 119, Learned Hand J. said of the expression/idea dichotomy: "Nobody has ever been able to fix that boundary, and nobody ever can". At 121; Lord Hailsham *LB (Plastics) Ltd v. Swish Products Ltd*., after remarking that it is trite law that there is no copyright in ideas, observed "it all depends on what you mean by 'ideas'" [1979] RPC 551 at 629.
[200] *RTE v. Commission*, *supra*, n.8.

companies claimed copyright in their respective weekly guides, and sued Magill for copyright infringement. However, Magill asserted that the broadcasting companies had violated Article 82 by refusing to grant it a licence under their copyright. As Cornish and Llewelyn explained, the case attracted the attention of competition authorities because "the right which underpinned the broadcaster's position was an extension of copyright to subject matter (straightforward factual information) which many Member States would consider not to justify intellectual property protection in the first place."[201]

The idea-expression dichotomy is consistent with competition law intervention when a protected work requires little or no initial R&D or investment such that it would have still arrived on the marketplace even without copyright protection. A copyrighted revolutionary software standard may be the result of a flash of inspiration without perspiration. Here, the copyright simply rewards the creator without really being an incentive for further innovation. However, it is controversial whether competition regulators should be arbiters of whether a product's claim to copyright is suspect and therefore should be compulsorily licensed as a remedy.

C. *Copyright Misuse*

Copyright misuse was invented by US courts to prevent owners from acting beyond the lawful scope of their copyright.[202] Having been found liable for

[201] W R Cornish and D Llewellyn, *supra,* n.52 at p. 755.

[202] In *Lasercomb v. Reynolds*, anticompetitive licensing agreements prohibited Lasercomb's customers from developing or assisting others to develop die-making software during the term of the standard licensing agreement for 99 years. The Court held that the monopoly power does not

infringement, defendants may raise this equitable shield to nullify the finding because the owner had acted inequitably, and should not be allowed to abuse the judicial process by benefiting from the damages that would otherwise be awarded. The misuse defence is particularly useful in the case of digital copyright where protection is less justified, but where the infringer cannot avail himself to either reverse engineering or technical necessity.[203] While there is no direct equivalent in the EU or Singapore, the appeal of the US copyright misuse led local commentator Burton Ong to suggest that:

> "If copyright law were to take on the responsibility of tackling the problem of anti-competitive refusals to license internally, but without overhauling the copyright system with an unavoidably detailed statutory scheme of compulsory licensing provisions, it might be more feasible to develop on a doctrine of 'copyright misuse'"[204]

The immediate benefit of relying on copyright misuse to regulate anticompetitive abuses is that there will not be a need to address the problems arising from grafting competition law onto copyright – a move that may cause further upset to the access-incentive balance. Like sector-specific regulation, rules and remedies can be better calibrated to the needs of the stakeholders rather than be subject to broad generic rule. However, two critical limitations prevent satisfactory resolution of anticompetitive copyright abuses under this doctrine.

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extend to property not covered by copyright. Holding that copyright misuse barred Lasercomb's infringement action, the court concluded that "[t]he misuse arises from Lasercomb's attempt to use its copyright in a particular expression, the Interact software, to control competition in an area outside the copyright, i.e., the idea of computer-assisted die manufacture. *Lasercomb Am., Inc. v. Reynolds,* [1990] 911 F.2d 970, 973-77 (4th Cir.) at p. 979.

[203] As one commentator has observed, "the misuse defense has been strongest where the justification for copyright is weakest--cases involving fact works or functional works such as computer programs." P Goldstein, *International Copyright- Principles, Law and Practice* (Oxford: Oxford University Press, 2003), p.320; B Ong, *supra*, n.92, at pp. 505-514 (This response from copyright law is necessitated, in part at least, because of the expansion of the copyright system to include nonexpressive, quasi-functional and highly technical "works" as copyrightable subject matter.)

[204] B Ong, *ibid*, at p. 512.

1. *Unclear Legitimacy*

The first limitation is the legitimacy of the doctrine is unclear. Explicit application of copyright misuse has been limited to lower courts in the US,[205] with the Supreme Court only suggesting as *dicta* that the doctrine may exist.[206] Most other courts that have considered the copyright misuse doctrine since 1990 have declined to apply it.[207] Even when one considers the law developed by lower courts, there appears to be no consensus on what the rules should be.

In *Triad Systems Corp. v. Southeastern Express Co*, [208] the Ninth Circuit held that copyright misuse was inapplicable, even where the alleged use was essential for competition in a market unrelated to the copyright.[209] The Court reasoned that there was no appreciable public benefit arising from competition with Triad in the downstream service market. The fact that such competition provided consumers with a choice for service providers was insufficient.[210] Rivals had to develop their own OS software and convince Triad computer owners to replace their existing software. This conclusion has been criticised as being economically unrealistic, as it would require competitors in digital markets to incur massive investment to enter markets that only incidentally involve the owner's copyright.[211] In contrast, the Court in *Alcatel v. DGI Technologies*[212]

[205] *Lasercomb Am., Inc. v. Reynolds, supra*, n. 149
[206] *United States v. Loew's, Inc*., [1962] 371 U.S. 38, at pp. 45-46
[207] H Hovenkamp *et al*, *supra*, n. 14, at p. 3-42.
[208] *Triad Systems Corp. v. Southeastern Express Co*., [1995] 64 F.3d 1330 (9th Cir)
[209] Without explanation, the Court expressly limited *Lasercomb* to situations where the license agreements prohibited customers or competitors from developing their own software. *Supra*, n.149, at p. 1337.
[210] *Ibid*.
[211] It is for precisely this reason that the Supreme Court ruled in *Eastman Kodak Company v. Image Technical Services, Inc* [1992] 504 U.S. 451, 480, 112 S.Ct. 2072, 119 L.Ed.2d 265 that

rejected *Triad*'s narrow approach, and held that as long as the owner used its copyright to indirectly gain commercial control over products that are not covered by copyright, copyright misuse was present.

2. *Unclear Role*

Second, it is unclear what role copyright misuse has to play in coexistence with competition law. Cases teach that in order for misuse to be established, the owner must have violated a substantial 'antitrust norm', and that this violation relates directly to the claim of copyright infringement.[213] Authority is split whether the misuse doctrine provides an open-ended defence for firms to allege that an owner has violated a distinct copyright policy or whether the doctrine merely tracks existing antitrust law standards.[214]

Those who argue for the continued development of copyright misuse note that copyright misuse has departed from antitrust principles procedurally and

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"one of the evils proscribed by the antitrust laws is the creation of entry barriers to potential competitors by requiring them to enter two markets simultaneously."

[212] [1999] 166 F.3d 772 (5th Cir.) In *DSC Communications v. DGI Technologies*, the Fifth Circuit employed the doctrine of misuse to restrict the owner's attempt to expand copyright beyond its scope and obtain a patent-like monopoly over a secondary market. The Court held that it was against public policy to afford a remedy to the owner with 'unclean hands', even when copyright had been directly infringed. To find liability for infringement would in fact be sanctioning the owner's attempt to use the court to extend copyright beyond statutory bounds.

[213] *Lasercomb*, *supra*, n.148.

[214] *USM Corp. v. SPS Techs., Inc*., [1982] 694 F.2d 505, 512 (7th Cir.) (Maintaining that patent misuse is best analyzed using antitrust standards). See J A D White, 'Misuse or Fair Use: That Is the Software Copyright Question', (1997) 12 Berkeley Tech. L.J. 251, 275 (collecting commentary), with *Lasercomb*, *supra*, n. 147 (framing issue as "whether the copyright is being used in a manner violative of the public policy embodied in the grant of a copyright"). In recent years, Congress has acted to limit misuse in the patent context. Congress passed the Patent Misuse Reform Act in 1988 to prevent patent holders from losing patent protection until the misused conduct ceased and its effects were purged. 35 U.S.C. § 271(d) (enumerating cases in which patent owners "shall not be denied relief or deemed guilty of misuse or illegal extension of the patent right," including derivation of revenue, licensing to others, seeking to enforce, refusing to license for use, and conditioning licensing or sale on acquisition of other licenses or rights).

substantively.[215] Procedurally, copyright misuse applies where antitrust does not. Substantively, the rationale for copyright misuse is more concerned with integrity of the judicial process and copyright policy, rather than competition. Copyright misuse is not only about 'monopolistic abuse', but also serves as an internal constraint on efforts to expand the copyright system beyond its bounds; thus, it would apply to conduct that antitrust law would not reach.[216] Given that copyright misuse is raised in the context of copyright infringement rather than an antitrust violation, US courts allowed the defence even without proof that the owner had technically violated antitrust laws.[217]

However, it is difficult to discern a distinct copyright policy in the misuse doctrine beyond these rather unimportant differences that seems to mirror the substantial antitrust elements of abuse. The analysis is circular, begging the issue copyright law needs to resolve, *viz*, what are the limits to its ability to use its copyright to raise barriers to market entry as part of a broader commercial strategy to foreclose the market to rivals.[218] Since antitrust law include every practice that

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[215] *In re Napster, Inc. Copyright Litigation*, [2002] 191 F.Supp. 2d 1087. (ND Cal) (Describing antitrust and public policy rationales for misuse as two different approaches) Professor Merges suggests that an independent role for intellectual property law here can complement the competitive protections developed by antitrust law. See R P Merges, 'Reflections on Current Legislation Affecting Patent Misuse', (1988) 70 J. Pat. & Trademark Off. Soc'y 793, at p.800 (suggesting that doctrine reasonably expands beyond antitrust because some 'thin' markets for patented technology would not meet antitrust definition of a market).

[216] *Mallinckrodt, Inc v. Medipart, Inc,* [1992] 976 F.2d 700 (Fed. Cir.) at 704. ("The concept of patent misuse arose to restrain practices that did not in themselves violate any law, but that drew anticompetitive strength from the patent right, and thus were deemed to be contrary to public policy.")

[217] The most obvious case is where may be applicable in the EU or Singapore is where the owner is not 'dominant'. Significantly, the Court in *DGI Technologies* noted that it is irrelevant whether or not there was monopoly power involved as long as such enforcement of copyright has effects in a secondary market. See R S Katx and A J Safer, 'Copyright Misuse: Inconsistent Cases from the 1990s and Simple Formula for the 21st century' (2000) 17 No. 4 Computer Law 3, at p.7 (suggesting a simple rule: (1) what is the market which copyright applies (2) is the rights holder trying to stifle competition on a separate market)

[218]H Hovenkamp *et al*, *supra*, n. 14 at §3.3a. "Outside a very narrow category of *per se* misuse, proving misuse will require an accused infringer to demonstrate that the patentee has power in the relevant market *USM Corp v. SPS Technologies Inc. supra*, n. 149 per Posner J. at 512. ("If

could impair competition, it is not easy to define a separate role for abuses of copyright monopoly.[219] The owner's refusal to license is objectionable because of the threat it poses to competition. If the defendant in a copyright infringement action cannot demonstrate harm to competition sufficient to trigger antitrust laws, it should not be allowed access through the back door on a lower threshold under copyright misuse.

It is important to note that the only relevant inquiry under copyright is whether the owner breached the scope of its copyright. While the degree of harm caused by the breach may be relevant, it is not a condition precedent to nullifying the copyright infringement. An owner tarred with misuse cannot enforce its copyright against any defendant, whether or not there is a relationship between the misuse and recovery it seeks. [220] This is because courts hearing subsequent infringement cases on the same infringed content are obligated to refuse to enforce a copyright for misuse.[221] Copyright owners therefore may be unable to enforce extremely valuable rights against infringers involved in later litigation because it was found to have misused its copyright in an earlier case. This encourages blatant infringement by giving undeserving infringers a 'free-ride' even on minor copyright misuses. This automatic refusal to enforce a misused copyright is harsh,

misuse claims are not tested by conventional antitrust principles, by which principles shall they be tested? Our law is not rich in alternative concepts of monopolistic abuse; and it is rather late in the day to develop one without in the process subjecting the rights of patent holders to debilitating uncertainty.")

[219] B Ong, *supra*, n.92, at pp.505-514 ("For a 'copyright misuse' doctrine to effectively respond to these scenarios, there must be a judicial consensus that (1) claiming copyright in an industry standard, when coupled by (2) conduct which induces customer dependence on that standard, such that (3) the copyrighted subject-matter is essential to market participation, and that (4) a bona fide request for a copyright licence for valuable consideration has been refused without any legitimate reason apart from the copyright owner's desire to exclude competitors from entering the market, should prevent the copyright holder from succeeding in an action for copyright infringement against a competitor which uses the copyrighted subject-matter in his own products")

[220] M A Lemley, 'Comment, 'The Economic Irrationality of the Patent Misuse Doctrine', (1990) 78 Calif. L. Rev. 1599, at pp.1614-20.

[221] *Ibid*, at p.1615.

and may lead courts who anticipate the unfair result in later cases result to refuse to find misuse in the first place. In this sense, copyright misuse is like a Pandora's Box: once invoked, its consequences cannot be controlled. At present, the boundaries of copyright misuse are poorly defined and unclear. Until this doctrine is more developed, it is submitted that antitrust law may provide a more reliable and consistent method of dealing with abusive conduct.

These limitations provide further evidence to the inadequacy of internal regulation, and strengthen the case for competition law. However, it is appropriate to acknowledge that shortcomings aside, developments in the copyright misuse doctrine have laid an important foundation for understanding the competition law aspects of copyright.[222] Given the inherent difficulties in applying competition law to digital copyright,[223] an eventual return to copyright misuse may be the best means of regulating the interface, once a better understanding of the anticompetitive effects of IPRs has been achieved.

C. *Compulsory Licensing*

Compulsory licensing is often the remedy for cases involving anticompetitive refusals to license. While the Singapore Copyright Act,[224] provides for half a dozen intricately articulated compulsory licensing provisions, they generally relate to distribution and reproduction for extremely fact specific

[222] D J Gifford, 'Developing Models for a Coherent Treatment of Standard-Setting Issues Under the Patent, Copyright, and Antitrust Laws' (2003) 43 IDEA 331 ("The misuse doctrines--despite their irregular development and the apparently different directions taken by the courts and Congress--are in fact pointing the way towards a new synthesis of intellectual property and antitrust.")
[223] See Chapters II, III and IV.
[224] Cap 63, 1999 Rev. Ed.

cases, and do not provide a general remedy for anticompetitive refusals to license.[225] If copyright law is to provide an endogenous solution through compulsory licensing, then it will have to develop along the lines of patent or semiconductor law, which bear closer similarity to the species used by competition law.

Patent owners in Singapore were initially liable for compulsory licensing if they were found not to have 'used' their patents. [226] Under the current rules, the court may order compulsory licensing to correct anticompetitive practices, which may *include* non-use.[227] This signals legislative desire to internalise the regulation of anticompetitive abuses. However, like copyright misuse the need to refer back to competition principles may cause its invocation to result in circular analysis, at least until a more solid foundation of jurisprudence develops.[228] Semiconductor legislation similarly provides for compulsory licenses to remedy anticompetitive practices.[229] Copyright law has no such express provisions, and its silence stands in stark contrast to legislative recognition that anticompetitive abuses need to be

[225] These are directed toward allowing copying for educational institutions, recording of musical works, government use, license to translate works, licenses to publish on grounds of non-availability in Singapore, licences for public performances and broadcast and cable programme licenses. See generally, G Wei, *supra*, n. 14, at pp.1112-1142.
[226] Sections 55(1) and (2) of the Patents Act 1995 provided that compulsory licenses may be available after the first three years from the grant of a patent for non-supply or supply based on unreasonable terms. See Annex A.
[227] Like its predecessor, Section 55 of the Patents Act 2002 provides for compulsory licensing as a remedy for non-supply or supply based on unreasonable terms. Subsection (2)(c) now expressly provides that the owner may show, as a defence, that it had a valid reason not to supply.
[228] See discussion on copyright misuse, at Chapter I, Part III.B.
[229]The Layout-Designs of Integrated Circuits Act (Cap 159A, 2000 Rev. Ed.). Section 27(1) allows those requiring access to protected layout design as a remedy to anticompetitive practices to apply to the Court for a compulsory licence. Section 27(2) goes on to state that if the Court is satisfied that this ground is satisfied, the Court may order the compulsory licences on terms which the Court thinks reasonable. The licence granted is non-exclusive, non-assignable and subject to the payment of remuneration specified by the Court. For a discussion, see G Wei, *supra*, n. 14, at pp. 1316-7.

checked. The case for competition law regulating copyright exploitation is therefore a compelling one.

D. *Evaluation*

Traditionally, copyright owners have had control over the uses typically made by commercial and institutional actors and little control over the consumptive users by individuals. In its haste to accommodate digital content owners without carefully considering counterbalances, copyright law has only itself to blame for its present inability to maintain the utilitarian balance. This permitted copyright law to be drawn as a complex, internally inconsistent code.[230] Changes in copyright law have tended to cause an *extrinsic* shrinking effect of the exceptions in proportion to the growing rights in addition to the *intrinsic* expansion of subject matter and length of copyright.[231] It may well have been this legislative myopia, which drew the attention of 'hawkish' judges and regulators anxious to rectify the imbalance. In this regard, Cornish and Llewelyn noted that:

> "(I)n a period when intellectual property rights are being rapidly expanded, it must be wise for competition authorities to retain some ultimate means of curbing their range in egregious cases which, in the scramble to satisfy industrial lobbies, legislation may not have sufficiently cogitated."[232]

Whether or not this is true, there are at least three reasons why competition law will likely remain on the copyright landscape for the foreseeable future. First, it should be remembered that third parties may not have access to the owner's

[230] J Litman, *supra*, n. 44, at p.19.
[231] *Ibid*, at p.15.
[232] W R Cornish and D Llewellyn, *supra,* n.52 at p. 755.

content. Internal copyright controls are *defences* to infringement, rather than affirmative courses of seeking redress for anticompetitive abuse as with competition law. In many cases, copying is impossible, either because of the sheer complexity of the information, the anticircumvention technology, or the laws prohibiting the circumventing of that technology. They are therefore largely useless in compelling disclosure. Second, copyright infringement litigation takes place between private parties. If these disputes are settled by private bargaining or worse, end up in collusive agreements, the others seeking access will not benefit. In contrast, competition law actions will likely be initiated by the competition authority. Even if the case ends before a court hears it, the written decision rendered by the authority will serve as a useful precedent for future cases. Third, with the enactment of competition law, it is likely that both courts and firms in Singapore will find it a novel and more attractive tool to regulate access. Given the growing commercial importance of copyright and her commitment to bilateral and multilateral agreements, any initiative toward diluting copyright in Singapore seems politically inexpedient, and therefore unlikely. Rivals seeking access under the open textured wording of Section 47 of the Singapore Competition Act 2004[233] may add flexible and intuitively attractive public policy arguments to their arsenal of reasons for access. Perhaps more importantly, complainants may enlist the aid of the competition authorities, along with their considerable resources, to compel access to copyright content. Courts hearing these disputes enjoy broad discretion again by virtue of the open textured drafting. It is conceivable that judges may feel they are doing more justice for the parties before them compared

[233] See Annex A for the text of Section 47.

to doctrinally restrictive copyright infringement disputes, whether or not this may really be the case.

IV. THE INTERFACE OF DIGITAL COPYRIGHT AND COMPETITION LAW: ANTITHESIS OR SYNTHESIS?

In introducing competition law to digital copyright, it is important to understand how they interact at the level of first principles. Whittled down to its simplest form, one may argue that copyrights confer monopolies and competition policy prevents monopolies, so the two are in conflict.[234] Indeed, carried to its logical conclusion, any refusal to license may amount to an 'abuse' under competition law. As Robert Cooter and Thomas Ulen aptly note: "[T]he dilemma is that without a legal monopoly not enough information will be produced but with the legal monopoly too little of the information will be used.".[235]

The capitalist free market works on the basis that competition works to ensure the most efficient allocation of resources in the absence of market failure, where due to inherent characteristics of the market, too much or too little is produced or consumed. Competition in the market has a direct impact on the efficiency of companies. Empirical studies show that free and open market

[234] *United States v. Westinghouse Elec. Corp*, [1981] 648 F.2d 642, 646 (9th Cir.). ("One body of law creates and protects monopoly power while the other seeks to proscribe it".); *Axis v. Micafil*, [1989] 870 F.2d 1105, 1111 (6th Cir.) (Asserting that because "Patent laws grant a monopoly for a limited time in order 'to promote (innovation)" while the "Antitrust laws, on the other hand, are designed to promote and protect competition in the marketplace," the two legal regimes "seek to further different and opposing policies"). Hon. Giles S. Rich, 'Are Letters Patent Grants of Monopoly ?' (1993) 15 W. New. Eng. L. Rev. 239

[235] R Cooter and T Ulen, *Law and Economics* (New York: HarperCollins, 1988) at p.135

competition disciplines firms into improving efficiency and product quality, with inefficient firms unable to respond to consumer needs forced out of business.[236] Companies not subject to the discipline of market forces may find that there is less incentive to maintain cost efficiency, and thus these companies risk becoming complacent.[237] In this regard, competition law protects competition and the competitive process by preventing conduct that threatens a free market.[238] Under price theory, market inefficiency is measured by the extent the marginal price exceeds the marginal cost of producing a good.[239] Allocative efficiency demands them to be equal.

On the other hand, digital copyright content is costly to produce, but costless to reproduce. For the copyright to have any meaning as a market mechanism, owners must have some power over price. Granting copyright owners exclusive rights limits diffusion to society and prevents competition in the sale of the work. It has also accepted that copyright allows owners to eliminate competition from unauthorised manufacturers and sellers of protected work.[240] Copyright law recognises that the pricing of digital content includes a reward. In economic terms, this means that marginal revenue exceeds marginal cost. With

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[236] World Bank, *Indonesia- Industrial Technology Development for a Competitive Edge* (Washington, 29 May 1996) Report No. 15451-IND (Citing studies on South Korean and Taiwanese firms a strong correlation between market competition and decisions to invest in technology upgrading to increase competitiveness.)

[237] Goh S H, 'Considering Open Source and Commercial Software Part II', (2005) 268(05) *Inter Se* January-February 22, at 27. ("In the software market, the availability of open source alternatives competing with commercial solutions has also made commercial software vendors more responsive to consumer needs, and more committed to delivering better and more innovative products and services")

[238] As Judge Learned Hand famously put it: "Possession of unchallenged economic power deadens initiative, discourages thrift and depresses energy; that immunity from competition is a narcotic, and rivalry is a stimulant, to industrial progress." *United States v. Alcoa*, [1945] 148 F.2d 416 (2d Cir.) (noting the argument but not necessarily endorsing it).

[239] See Chapter III, Part III for further discussion of this.

[240] H Hovenkamp *et al*, *supra*, n. 14. The reasons for competition law accommodating this market aberration will be seen in Chapter III in the discussion on 'Static Efficiency'.

reference to **Fig 6**, this is represented by the difference between the optimal price of p* and actual price, p_c.[241] In addition to the obvious loss to consumers in lower output and higher prices, microeconomic theory recognises this deviation creates a deadweight loss to society, indicated by the shaded area.[242] In this sense, copyright is not a response to allocative distortions resulting from scarcity, as real property law is. Rather, it is a conscious decision to *create* scarcity in a type of good in which it is ordinarily absent in order to artificially boost the economic returns to innovation.[243] This characteristic squarely sets copyright apart from real property, and has significant repercussions for competition policy at the Interface.[244]

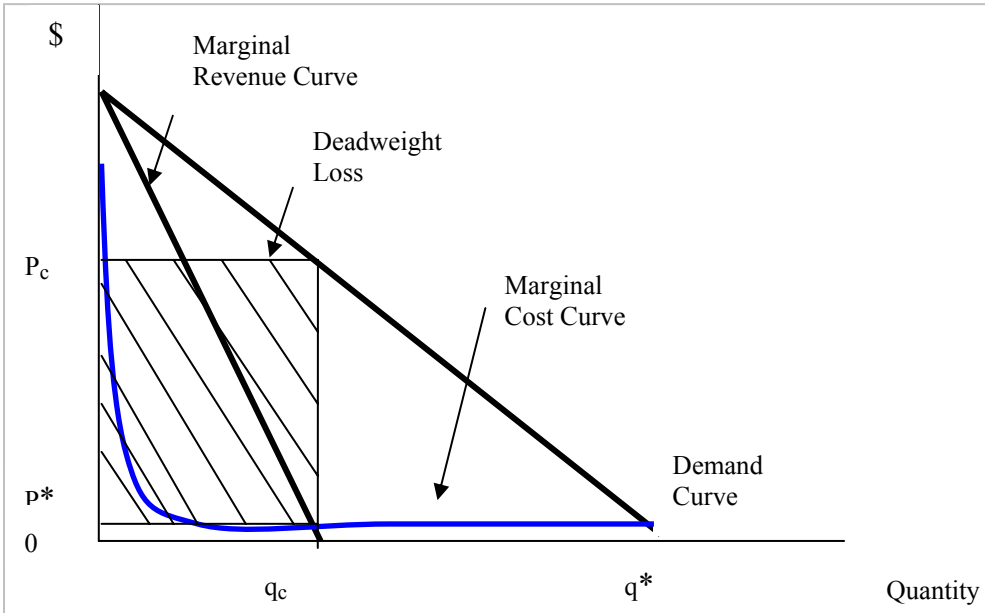

Fig. 6 shows the copyright owner's demand and supply curves. From an allocative efficiency viewpoint, competition law is concerned about reducing the amount of deadweight loss caused by the exercise of the copyright. p* and q* represent the ideal price and output levels, and Pc and qc represent the higher prices and reduced output resulting from market power. The real world optimal point lies somewhere between p* and Pc and q* and q_c respectively, one possible point being where average revenue equals to average cost. The challenge regulators face is in finding that point while balancing the interests of copyright owners.

[241] The value of p* in the case of digital goods would be near zero, since information is nearly costless to reproduce. Case 53/97 *CICRA and Maxicar* [1988] ECR 6211, at para. 17.
[242] The cost to society of a market that does not operate optimally.
[243] J E Cohen, 'Lochner Cyberspace: The New Economic Orthodoxy of 'Rights Management,' (1998) 97 Mich. L. Rev. 462, pp.471-473
[244] See in particular, discussion in Chapter II, Part II, Chapter III, Part III, Chapter IV, Part IV.

The goal of competition law is to reduce the gap as far as practicable,[245] particularly where the owner has anticompetitively abused its copyright to be able to perpetually charge p_c. The law acts either directly through punitive fines, or indirectly through compulsory licensing of rivals that in turn provide cheaper alternatives. However, this presupposes that the law can accurately identify when the owner has crossed the line dividing legitimate exploitation and the metaphysical point of 'abuse' has been crossed.[246] The truth is that it cannot. Courts therefore rely upon a barrage of tests and theories to *estimate* when to intervene. As will be seen in subsequent chapters, even with these rough yardsticks, competition law has met with frustratingly mediocre success. [247] The challenge is then one of developing a framework that promotes a smooth synergy.

Those schooled in the common law are familiar with the difficulties of applying law and equity to a given set of facts, even when it is broadly understood that where the two conflict, equity prevails. This complexity is raised when a case concerns conflict between competition law and copyright law. Where should a court begin to find a comprehensive resolution between litigating parties when both regimes stand equal as creatures of statute?

Data General Corp. v. Grumman Systems Support Corp was the first case to consider whether unilateral refusal to license was abusive. Even today, it still

[245] These goals are not uniform, but diverse and sometimes conflicting, as the discussion in Chapter III illustrates.
[246] See Introduction. This is quite apart from difficulties in defining the demand curve, measuring marginal cost and finding the 'right' amount of deviation to justify action. D W Carlton and J M Perloff, *supra,* n. 22 at p. 643.
[247] See Chapter IV, Part III for a detailed discussion of these problems.

provides perhaps the most extensive analysis of the issue. [248] A computer manufacturer refused to license its copyright over a diagnostic program to a rival independent service provider (ISO). The ISO contended the refusal amounted to an illegal maintenance of its monopoly in the downstream service market. In response, the manufacturer argued that IPRs were immune from antitrust laws. This *carte blanche* approach was rejected by the Court, which devised a framework to evaluate when IPRs might be curtailed in the interests of competition. First, the Court held that neither the antitrust nor IP legislation worked to erode the scope of other. Second, it recognised the limited copyright monopoly was based on Congress' intent that the right to "exclude others from using their works creates a system of incentives that promotes consumer welfare in the long term by encouraging investment in the creation of desirable artistic and functional works of expression",[249] and therefore could not "require antitrust defendants to prove and reprove the merits of this legislative assumption in every case where a refusal to license a copyrighted work comes under attack."[250] Third, IPRs, although granted by the State, were not exempt from the application of antitrust law. As a result of these three propositions, the court established that "while exclusionary conduct can include a monopolist's unilateral refusal to license a copyright, an author's desire to exclude others from use of its copyrighted work is a presumptively valid business justification for any

[248] *Data Gen. Corp. v. Grumman Sys. Support Corp*. [1994] 36 F.3d 1147 (1st. Cir.)
[249] *Ibid*, at p.1187.
[250] An additional explanation for this conflict stems from competition law's focus on attaining competitive market conditions not particular outcomes, as opposed to intellectual property law's preoccupation with ensuring the optimum amount of innovation. Competition law assumes that deterring monopolies will lead to the attainment of economic efficiency, while intellectual property law assumes that efficiency will be achieved only if regulators correctly estimate the proper mix of incentive and access to copyright as needed to provide the optimal amount of innovation. See D McGowan, Regulating Competition in the Information Age: Computer Software as an Essential Facility Under the Sherman Act, 18 Hastings Comm. & Ent. L.J. (1996) 771, 773-74; Thomas F. Cotter, Intellectual Property and the Essential Facilities Doctrine, (1999) 44 Antitrust Bull. 211, pp.227-28.

immediate harm to consumers."[251]

The better view of the Interface then may be that the two laws do not operate in the same way and at the same level.[252] Copyright and competition law are complementary. Copyright puts in place a system of incentives to encourage invention and the bringing of new products to market by adjusting investment-based risk. Copyright facilitates product differentiation,[253] but it does not normally confer market power. Under copyright policy, any person should remain free to produce a work that is similar to a pre-existing work as long as the later work is not a clone. Competition law is more concerned with the use of market power than the mere possession of it.[254] Competition law explicitly permits firms to charge monopoly prices and profit from their lawfully obtained monopoly[255] for the same reason that copyright laws create property rights - to create and protect *ex ante* incentives for entrepreneurship, innovation, and commercial success.[256]Thus seen, it operates at a behavioural level on an *ad hoc* basis, interfering only when it detects anticompetitive behaviour extending beyond the

[251] At p. 1187.
[252] W J Bowman Jr., *Patent and Antitrust law: A Legal and Economic Appraisal* (University of Chicago Press: Chicago, 1973).
[253] See Annex E- Glossary for explanation of product differentiation.
[254] As Judge Learned Hand put it: "A single producer may be the survivor of a group of active competitors, merely by virtue of his superior skill, foresight and industry. In such cases a strong argument can be made that, although the result may expose the public to the evils of monopoly, the (Sherman) Act does not mean to condemn the resultant of those very forces which it is its prime objective to foster… the successful competitor, having been urged to compete, must not be turned upon when he wins." *United States v. Aluminium Co. of Am. supra*, [1945] 148 F. 2d 416 (2d Cir) at 430.
[255] *Blue Cross & Blue Shield United of Wis. v. Marshfield Clinic*, [1995] 65 F.3d 1406, (7th Cir.) (monopolist that has acquired and maintained its monopoly by lawful means "can . . . charge any price that it wants, . . . for the antitrust laws are not a price-control statute"); *Olympia Equip. Leasing v. Western Union Tel. Co.*, [1986] 797 F.2d (7th Cir.) at 376 ("(a) monopolist has no duty to reduce its prices in order to help consumers").
[256] Antitrust Guidelines for Collaborations Among Competitors § 3.2 (2000); *Olympia Equip. Leasing*, *ibid* at 375 ("(a) monopolist, no less than any other competitor, is permitted and indeed encouraged to compete aggressively on the merits")

copyright grant. Competition law therefore should restrict itself to addressing anticompetitive behaviour consistent with the ambit of copyright law.[257]

Indeed, when one takes a long-term view of markets, copyright and competition law may share a common goal.[258] Copyright often bring about greater inter-brand competition by encouraging undertakings to develop new products to go on the market thus encouraging effective inter-brand competition. Thus seen, the grant of a monopoly is a lesser evil to achieve the greater good of increased inter-brand competition. Identifying complementary goals for the two laws does not end the inquiry. They strive toward these goals in ways that are often in tension. Where the two laws come into contact, judges must reconcile this tension between them. Efficient maximisation of social welfare requires that rules are developed to help draw a line between what is permissible and what is not.

[257] P Torremans, *Holyoak and Torremans Intellectual Property Law* (3rd ed, Butterworths, 2001), at 302-309; see also the introductory comments in R Whish, Competition Law (4th ed, Butterworths, 2001), at 676.

[258] *Atari Games Corp. v. Nintendo of Am., Inc*., [1990] 897 F.2d 1572, 1576 (Fed. Cir.). The court in Atari explained that "the aims and objectives of patent and antitrust laws may seem, at first glance, wholly at odds [but] the two bodies of law are actually complementary as both are aimed at encouraging innovation, industry and competition". See also C A Kranick 'Copyright Law-Copying For The Purpose Of Future Compatibility Is Not Fair Use - *Atari Games Corp. v. Nintendo Of America*, *Inc*.,(1993) 12 Temp. Envtl. L. & Tech. J. 251.

CHAPTER II:
♦RULES♦

I. INTRODUCTION

He that would govern others first should be master of himself.

Philip Massinger[259]

In Singapore, the principal rule applicable to cases falling under Section 47 of the Competition Act is that an undertaking, on becoming dominant, must not abuse its market power. The court must determine two issues.[260] First, the complainant must show that the offending copyright owner was 'dominant'. If it fails, the inquiry ends. Competition law has pragmatically adopted this *de minimis* approach to filter out conduct without significant impact on the market. Second, the owner must have 'abused' that dominance on a 'relevant market'. 'Abuse' turns upon whether the owner "protects, enhances, or perpetuates" its dominant position "in ways unrelated to competitive merit".[261] Once the complainant has discharged its legal burden, the owner will be found liable for predatory conduct unless it can offer some pro-competitive "objective justification".[262] These are the rules at the Interface.

From a study of US and EU cases, Chapter II suggests that these rules do not sufficiently take into account the differences between digital copyright markets and those in traditional industries. Part II begins by examining the

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[259] P Massinger, Timoleon in 'The Bondman, act 1, scene 3' (1624), P Edwards and C Gibson, *Poems of Philip Massinger*, (Gloucestershire: Clarendon Press, 1976)

[260] Competition Commission of Singapore Draft Guidelines on the Section 47 Prohibition (CCS Guidelines), para. 3.1, available at: http://www.ccs.gov.sg/Doc/GuidelinesConsultation/Abuse_of_Dominant_Position29032005.pdf ("There is a two-step test to assess whether the section 47 prohibition applies: (1) whether an undertaking is dominant in a relevant market, either in Singapore or elsewhere (2) if it is, whether it is abusing that dominant position in a market in Singapore.")

[261] *Ibid*, at para. 2.1.

[262] *Ibid*. at para. 4.6.("Where the dominant undertaking can show that the conduct leads to improvements in economic efficiency and that the benefits could not be achieved without producing such anti-competitive effects, the CCS will not find abuse.")

implications of Section 47 being an open-textured directive. While this allows flexibility to regulate vastly different industries, this open-texture introduces a degree of arbitrariness. This may be remedied in part by drawing on the relationship between generic competition law and sector-specific regulation. Part III examines the concept of "dominance", the first limb of the Section 47 test, and suggests how it should be modified when applied to digital copyright markets.

The focus of Chapter II is, however, on Part IV. Here, an analysis is conducted on the forms and tests for "abuse", the second limb of the Section 47 test. As will be seen, it is nearly impossible for a court to confidently make a finding that the copyright owner has abused its dominance simply in refusing to license. Over the years, courts have developed various categories of, and tests for, "abuse", but they are closer to being presumptions, rather than bright line rules. Chapter II concludes that in order to develop a clear and useful set of rules at the interface, courts and policy makers in Singapore need to first settle on a well-defined consensus of two things: the economic goals of competition policy and the underlying legal analysis which supports the test for 'abuse'. These ideas will be developed further in Chapters III and IV respectively.

II. SECTION 47: TWO OBSERVATIONS

Like Section 2 of the Sherman Act and Article 82 of the EC Treaty, Section 47 has been drafted in a broad textured manner, leaving judges to develop generic competition law through subsequent interpretation. Section 47 is brief and

more readable compared to other forms of detailed commercial legislation.[263] However, the operative terms – 'dominant' and 'abuse' - are opaque. As the US Supreme Court in the recent landmark case of *Verizon Communications Inc. v. Law Offices of Trinko* observed "[u]nder the best circumstances, applying the requirements of §2 can be difficult, because the means of illicit exclusion, like the means of legitimate competition are myriad."[264]

Those seeking clarification of the key terms through either the parliamentary debates preceding their enactment and the Guidelines drafted thereafter will be disappointed, for they cast only a dim light. [265] This means that courts have tremendous discretion to craft competition law in a manner unparalleled in modern commercial laws in Singapore, which have been more commonly based on detailed statutory provisions. Given the recent vintage of the Competition Act, Singapore courts will doubtlessly spend many years supplying the meaning of these terms.

The second observation relates to how generic competition law relates to sector-specific regulation. The US and EU seem divided in their approach. *Trinko* held that there was no space for competition law remedies once a sector-specific

[263] See for example, the rules governing formation and winding up in Company Law. W Woon, *Company Law* (Sweet & Maxwell: Singapore, 1995), at pp. 31-52, 653-729.
[264] *Verizon Communications Inc. v. Law Offices of Cutris V. Trinko*,('*Trinko*') [2004] LLP 540 US 682. Citing the Court of Appeals (DC Circuit in *Microsoft*). *United States v. Microsoft Corp.* [2001] 253 F.3d 34 at 58.
[265] As Burton Ong noted: "While it may not be practical for precise definitions to be given to the key words and phrases used in the statutory provisions, many of which are based on economic concepts which mean different things in different contexts, *it is entirely appropriate for the statute to articulate how these words and phrases will be interpreted and applied* – a non-exhaustive list of relevant factors, major considerations, and other qualifying criteria would provide *much-needed depth* to the legal framework." (emphasis mine) B Ong, Second Consultation Paper on the Singapore Competition Bill. On file with author.

regime has been established.[266] In contrast, the EU Commission decision of *Deutsche Telekom*,[267] held that competition law may apply regardless of the presence of such regulation. This discussion is particularly significant to the Interface because copyright *is* a form of sector-specific regulation, and conclusions distilled may point the way forward.

A. *The Benefits and Perils of Open Textured Legislation*

It may first be said that open-textured legislation is neither uncommon nor undesirable. Parliament may have intentionally left the task of tailoring competition rules to judges. As in other growing areas of the law, it anticipates that judges will draw on foreign developments to craft a system of competition law. The technicalities that sector-specific considerations may pose do not detract from the acceptability of open textured drafting. Judges have proven themselves competent enough to handle both technical complexities in biotechnology and commercial nuances in corporate insolvency and taxation. It is not immediately apparent why competition law should any different.[268] Second, open-textured legislation provides the malleability in interpretation and subsequent application required in diverse industries governed by generic competition law. Broad judicial discretion allows the law to adjust quickly to confront new realities.[269] This is

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[266] *Trinko*, *supra,* n.6, at p.881("One factor of particular importance is the existence of a regulatory structure designed to deter and remedy anticompetitive harm. Where such a structure exists, the additional benefit to competition provided by antitrust enforcement will tend to be small, and it will be less plausible that the antitrust laws contemplate such additional scrutiny.").

[267] Commission Decision No. 2003/707/EC of 21 May 2003, *Deutsche Telekom AG* OJ L 263 of 14 October 2003, pp. 9-41. See R Kloz and J Fehrenbach, 'Two Commission Decisions on Price Abuse in the Telecommunication Sector' (2003) 3 Competition Policy Newsletter, at p. 8.

[268] Though as will be seen, there are significant differences. See Chapter III, Part IV.

[269] See H.R. Rep. No. 94-1476, at 65-66 (1976), reprinted in 1976 U.S.C.C.A.N. 5659, 5678-80 (Discussing conception of fair use doctrine as delegation to courts to develop the contours of the principle); see also C M Rose, 'Energy and Efficiency in the Realignment of Common-Law Water

superior to legislating detailed but inflexible rules that may be in danger of being both over-inclusive or under-inclusive.

However, from this rose-tinted vantage point, it is easy to gloss over two fallacies. First, the fact that judges have been responsible for developing technically complex areas of the law says nothing of its desirability. Indeed, there are cogent reasons why it may not be. One reason is that while articulation of broad legal principles poses little difficulty, applying those principles in competition law cases may pose distinct challenges not found in other areas. Unlike other areas of common law, competition law hinges on economic theory. This theory rests on strict assumptions that courts may not have fully appreciated in the digital context.[270]

Second, Section 47 stands in stark contrast to the detailed legislation covering other areas of commercial conduct. For example, the Company Act details provisions on the formation, conduct of business and dissolution; [271] and IP legislation details rules relating to grant, infringement and the applicable exceptions, limitations and defences.[272] It is significant that during the consultation process leading up the enactment of the Competition Act, Temasek Holdings argued that the law was "too general".[273] In particular, it noted that the

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Rights', (1990) 19 J. Legal Stud. 261, 267-94 (Discussing evolution of water rights property schemes). Given the dynamic nature of the Internet, some have argued that this model promotes more flexible and effective rules; S Sherry, 'Haste Makes Waste: Congress and the Common Law in Cyberspace', (2002) 55 Vand. L. Rev. 309, 312 (arguing that the nature of common law adjudication, which allows for constant re-evaluation, provides a vehicle superior to legislation in regulating fast-changing technologies).

[270] This argument will be fully considered in Chapter IV, Part IV.

[271] See generally, W Woon, *supra,* n.5.

[272] See generally, G Wei, , *The Law of Copyright in Singapore*, (SNP Editions: Singapore, 2000).

[273] 'Temasek: Focus Competition Law on Sectors with Natural Monopolies', The Straits Times, 4 June 2004.

Act left too much discretion to the Competition Commission of Singapore to decide what would be prohibited. Temasek argued that all rules should to be clearly defined upfront, "so as not to introduce another layer of administrative and market costs" stemming from commercial uncertainty. [274] It may perhaps be understandable then that firms like Temasek are concerned with vague provisions such as Section 47.

B. *Section 47 and Sector-Specific Regulation*

In *Trinko*,[275] Verizon was compelled by the Federal Communications Commission under the US Telecommunications Act 1996[276] to share its local networks with entrants. Trinko, a firm that bought services from one of the entrants alleged that Verizon had violated Section 2 by filling rival's orders in a discriminatory manner to discourage customers from joining the entrants. On appeal, the Supreme Court placed strict limitations to the situations where antitrust law could interfere with market with sector-specific regulation, suggesting that the existence of sector-specific regulation should leave little scope for antitrust

[274] *Ibid*. More than once, the US Supreme Court has held that a state statute void for uncertainty, even though it was argued that these statues were no more uncertain than the Sherman Act. *Connally v. General Construction Co.* [1926] 269 US 385 and *Cline v. Frink Dairy Co.*[1927] 274 US 445. In each case, the Court distinguished the Sherman Act on two grounds. First, it satisfied the level of certainty required by due process. Second, since the Sherman Act's 'rule of reason' embodies rules declared by common law precedents, it afforded a definite and certain objective standard. Because the exclusionary effect of copyright is *prima facie* legal, all refusals to license are subject to 'rule of reason' type analysis, whether the jurisdiction acknowledges it or not. While the constitutionality of Section 47 may unquestionable despite its vagueness, it provides cold comfort to those seeking legal certainty in this provision.
[275] *Trinko*, *supra*, n.6.
[276] Pub L No 104-104, 110 Stat 56.

intervention.[277] In contrast, the EC in *Deutsche Telekom* held that sector-specific regulation did not preclude competition law.[278]

Damein Geradin, an EU commentator supports the view taken in *Trinko*. He argues that competition law should not intervene where there is an "effective" sector-specific regulatory regime in place,[279] giving two reasons for this. First, sector-specific regulators are better placed than both courts and generic competition regulators to address access issues requiring technical expertise.[280] Second, having two sets of rules administered by two authorities involved in similar issues risks contradictory decisions and inconsistent remedies. This is similar to the argument made earlier in the context of applying copyright misuse to anticompetitive abuses. This must be right. The existence of sector-specific regulation in areas such as telecommunications, gas and electricity suggest that a blanket approach is undesirable. Like company law, regulation makes sense only if applied to relatively stable and uniform circumstances.

A move toward abandoning generic competition law in favour of sector-specific regulation because of miniscule differences in their underlying economics should be stoutly resisted; broad stroked application of a generic competition law seems equally hazardous. On the other hand, where sector-specific regulation is

[277] *Trinko*, *supra*, n.6.
[278] *Deutsche Telekom*, *supra*, n.9 at para. 53 (The Commission noted that "competition rules may apply where sector-specific regulation does not preclude the undertakings it governs from engaging in autonomous conduct that prevent, restricts or distorts competition.")
[279] D Geradin, 'Limiting the Scope of Article 82 of the EC Treaty: What can the EU learn from the US Supreme Court's Judgement in *Trinko* in the wake of *Microsoft*, *IMS* and *Deustche Telekom*?' (2005) Common Law Market Review. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=617263 at p.27.
[280] See Chapter IV for a discussion of this in the context of the Cost-Benefit Approach.

ineffective, because of limiting deficiencies in the rules or regulatory capture,[281] regulators should be left free to invoke proceedings under competition law.[282] In sum, while 'open-textureness' of Section 47 seems to be the most administratively efficient means of regulating abuses, there will likely be times when rules transplanted from industries will be inappropriate in digital copyright markets. These issues will become more apparent as each limb of the Section 47 test is considered.

III. DOMINANCE AND DIGITAL COPYRIGHT

It is incumbent upon any complainant alleging abuse under Section 47 to show that the copyright owner does indeed have market power. Without market power, the owner is naturally constrained by its rivals, and competition law has no cause to intervene. With market power, the copyright owner can eliminate rivals, exploit consumers and retard innovation. [283] This begs the question what the test for market power should be. Courts have relied on two measures. The first is a static snapshot of the market, based on cost-price differentials and market shares.

[281] The issue of regulatory capture is explored further in Chapter IV. See Glossary in Appendix E for explanation.
[282] D Geradin, *supra*, n.21 at p.23.
[283] CCS Guidelines, *ibid*, at para. 3.3 ("Market power can be thought of as the ability to profitably sustain prices above competitive levels or to restrict output or quality below competitive levels. An undertaking with market power might also have the ability and incentive to harm the process of competition in other ways, for example by weakening existing competition, raising entry barriers or slowing innovation. Market power arises where an undertaking does not face sufficiently strong competitive pressure. Both buyers and sellers can have market power.") In the EU, market power is a position of economic strength which enables the undertaking "to prevent effective competition on the relevant market by giving it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers" *United Brands v. European Commission,* [1978] E.C.R. 207. For a similar US perspective, see *United States v. Microsoft Corp.* [2001] 253 F.3d 34 at 57-58 ("Direct evidence of monopoly power includes setting price without considering rivals' prices"); R A Posner, 'The Social Costs of Monopoly and Regulation' (1975), 83 Journal of Political Economy 807. For an economic analysis, see J Tirole, *The Theory of Industrial Organisation* (Cambridge: MIT Press, 1987). One possible area of difficulty is whether the market share of licensees should be taken into account in calculating the market share of an alleged dominant undertaking.

The second is a dynamic measure based on ease of rival entry as a competitive constraint of the owner.

A. *Static Indicators*

Adam Smith's notion of the invisible hand as the guiding mechanism of the economy is essential to understanding the regulator's concern with economic dominance.[284] Competition is the principal regulator of commercial forces in a capitalist market ensuring optimal welfare for society. Popular economic theory posits that resources are most efficiently allocated under conditions of 'perfect competition',[285] driving prices down to their marginal costs of production. Accordingly, any deviation from marginal cost indicates market power that should catch the attention of vigilant regulators.

Where market power cannot be measured directly, it may be inferred by market shares.[286] Market power thus turns upon the owner's ability to exclude or eliminate competition in the "relevant market".[287] The Guidelines state that

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[284] Smith presumes that self interest drives individual competitors' to persuade customers on grounds of quality and value to make a particular purchase. A Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (New York: The Modern Library, 1937) See also S. Willimsky, 'The Concept of Competition' (1997) 1 ECLR 54. ("It is believed that only selection, expressed through consumer choice, would lead to an equilibrium of demand and supply and hence further the interests of society as a whole. Adam Smith's 'invisible hand' … would lead to the best overall solution.")

[285] This economic Shangri-la is characterised by negligible entry barriers, fungible goods and infinite sellers and buyers, resulting in goods and services being sold to all consumers willing and able to pay the opportunity cost of production. See S Martin, *Industrial Economics: Economic Analysis and Public Policy*, (New York: Macmillan, 1994) at 15.

[286] "Firms are subject to three main sources of competitive constraints: demand substitutability, supply substitutability and potential competition. From an economic point of view, for the definition of the relevant market, demand substitution constitutes the most immediate and effective disciplinary force on the suppliers of a given product." Commission Notice on Market Definition, (1997) OJ C372/5, para. 13.

[287] This includes the relevant product and geographical markets. See CCS Guidelines, *supra*, n.2, at para. 3.2; *United States v. AT & T Co.*,[1981] 524 F.Supp. 1336, 1347-48 (D.D.C.) ("a persuasive showing ... that defendants have monopoly power ... through various barriers to entry, ... in combination with the evidence of market shares, suffice[s] at least to meet the government's initial burden, and the burden is then appropriately placed upon defendants to rebut the existence

dominance is presumed if the undertaking has a 60% market share.[288] For copyright owners, how the relevant market is defined will have a significant impact on the ultimate determination of anticompetitive liability. For example, if the court regards the relevant market as coextensive with the scope of the copyright, mere ownership confers dominance.[289] The problem is that unlike tangible goods, copyright may only exist through its exercise.[290] Further, copyright exists to limit access artificially, so that prices can be raised above marginal costs.[291]

The digital dimension that copyright owners operate in further makes their conduct suspect. Digital copyright markets are subject to 'instant scalability'. In

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and significance of barriers to entry:). US Courts have indicated that products "reasonably interchangeable by consumers for the same purposes" constitute this market. *United States v. E.I. du Pont de Nemours & Co.,* [1956] 351 U.S. 377, 391, 76 S.Ct. 994, 100 L.Ed. 1264. ("Because the ability of consumers to turn to other suppliers restrains a firm from raising prices above the competitive level, the definition of the 'relevant market' rests on a determination of available substitutes.").; *Continental Can v. Commission* [1973] ECR 215 ("The possibilities of competition can only be judged in relation to those characteristics of the products in question by virtue of which those products are … interchangeable with other products") at para. 14. *Hoffman-La Roche v. Commission,* [1979] ECR. 461. In defining the relevant product market, Courts and Regulators have adopted the US tests for demand and supply substitutability, *Commission Notice on Definition of Relevant Market, supra,* n.28. In defining the relevant geographic market, Courts look at the region "where the conditions of competition are sufficiently homogenous for the effect of economic power of the undertaking concerned to be evaluated" *United Brands v. Commission*, *supra*, n. 23, at para. 11.

[288] CCS Guidelines, *supra*, n.2, at para. 3.8. (Market shares between 47%-50% or between 50%-55% have been considered insufficient: *Springfield Terminal Ry. Co. v. Canadian Pac. Ltd*., [1997] 133 F.3d 103, 107-08 (1st Cir.); but in other cases a 24% market share has been considered sufficient. *Twin City Sportservice, Inc. v. Charles O. Finley & Co*., [1982] 676 F.2d 1291, 1298 (9th Cir.))

[289] Thus in *Volvo v. Veng (UK) Ltd* Case 238/87 [1988] ECR 6211, the relevant market was found to be in Volvo spare parts. Volvo accordingly held a dominant position, which it could abuse by refusing to license to service repair shops.

[290] A Robertson, 'The Existence and Exercise of Copyright: Can it Bear the Abuse?' [1995] 111 LQR 588 at 588 (Noting in the context of *Magill*, that the distinction between existence and exercise of copyright is unconvincing, since its existence lies in its exercise.) For example, a car owner may use his car as a shelter from the rain or to listen to music, even if he does not exercise its primary function as a mode of transport. In contrast, for copyright, the only form of exercise is in being able to exclude imitation and access without adequate payment.

[291] This simply reflects a market situation where each firm is seeking to recover its unusually high investment costs by pricing above marginal cost. Thus a vigorously competitive market may exist despite each firm's pricing well above marginal cost See discussion in Chapter I, Part IV; see also H Hovenkamp *et al*, *IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property* (New York: Aspen Law, 2003) at § 4.1c.

non-digital markets, the dominant firm's market share indicates to some degree, its ability to restrict the aggregate industry supply, hence the greater its market power. This power stems from the positive and increasing marginal costs of production faced by non-dominant rivals. As these rivals expand sales in response to the dominant firm's reduction, the expansion is choked off by rising marginal costs. In the case of digital content, marginal cost is negligible over full scope of the expected market. If the dominant producer restricts its output, non-dominant rivals can easily expand their output.[292] Entrants could simply enter the market, produce at the same output level as the largest incumbent, and enjoy costs as low as those of incumbents. This is particularly so in software industries, where marginal costs are negligible.[293] Large market shares by themselves therefore do not automatically translate into market power. A more relevant measure of market power in digital copyright markets may be the extent that alternative technologies exist, or the number of firms offering such technology. These are a better gauge of the competitive constraints copyright owners face in these fluid markets.

Finally, with the rapid technological change characteristic of digital copyright markets, market definition in one case may quickly become irrelevant in the next case when different facts arise. Observers agree that the functions of the PC operating systems (OS) have grown and will continue to grow. New software packages, such as Windows XP, incorporate additional functions found in

[292] The assumption is here is that there are no capacity constraints. See G J Stigler *The Organization of Industry*, (Univeristy of Chicago Press: Chicago, 1968) at p. 67

[293] Economies of scale therefore do not constitute a barrier to entry if both entrants and incumbents have access to the same cost curve. Accordingly, if Microsoft were to restrict sales of Windows, IBM could easily expand its output of OS/2 by duplicating Microsoft's licence with OEMs. The collective expansion of non-dominant producers would then be able to offset fully the supply curb of the dominant producer. In this case, there would be no correlation between market share and market power.

previously separate products. New demands require OS to manage hardware that is more diverse or demanding. While this enhanced functionality may ultimately benefit consumers.[294] this may work against efforts to define the boundary between OS and applications software, and thus the relevant market.[295]

It is comforting to note that even in its embryonic form, the authorities in Singapore have committed to the position that the competition law does not prohibit dominance *per se*.[296] The Guidelines prudently recognise that market shares represent only a snapshot of the market situation, and may not be a reliable guide to market power "both as a result of shortcomings with the data and for reasons such as low entry barriers, successful innovation, product differentiation, responsiveness of buyers to price increases and price responsiveness of competitors".[297] It follows that the next measure of dominance becomes even more determinative.

B. *Dynamic Indicators*

Entry barriers provide a dynamic dimension to the analysis of market power in digital copyright markets by taking into account competitive pressure

[294] For example, the popularity of Internet applications has led Web browsers to become routinely integrated into or bundled with OS products. Microsoft's Internet Explorer was integrated into Windows 98 and its progenies But Microsoft is hardly alone. IBM has led this trend, developing its own browser for OS/2. Sun Microsystems' Solaris and Java OS, SCO's UnixWare and Open Server all provide browsing by bundling Netscape Navigator with OS.
[295] S J Davis *et al*, 'Economic Perspectives on Software Design: PC Operating Systems and Platforms', in David S. Evans, *Microsoft, Antitrust and the New Economy* (Boston: Kluwer Academic Publishers, 2002) at p.362
[296] CCS Guidelines, *supra*, n.2 at para. 2.1 ("The section 47 prohibition only prohibits *abuse* of a dominant position. It does not prohibit undertakings from having a dominant position or striving to achieve it.")
[297] *Ibid*, at para. 3.6-7.

from potential rivals. [298] The more difficult it is for rivals to enter the market, the more incumbents can raise prices above the competitive level.[299] Competition authorities are concerned with the strategies dominant firms use to raise entry costs, [300] as these have been empirically found to reduce social welfare.[301] The ability to raise entry barriers is therefore a sign of market power.[302]

The Guidelines suggest that competition authorities will rarely regard digital copyright as being a significant entry barrier. [303] This is because copyright does not prevent third parties from compiling the same material from a common source. [304] For example, Microsoft's copyright over its Windows OS only allows

[298] The traditional understanding of entry barriers refer to the cost advantages of incumbents over entrants. Economics of large scale, product differentiation, and absolute cost advantages of incumbent firms compared with entrants are the main determinants of entry conditions. J S Bain, *Barriers to New Competition*, (Harvard University Press: Cambridge, MA,1956) at p.10.

[299] The difference between the competitive price and the entry-inducing price reflects unit costs borne by an entrant but not by an incumbent. See also CCS Guidelines, *supra*, n.2, at para. 3.11. ("Entry barriers are important in the assessment of potential competition. The lower the entry barriers, the more likely it will be that potential competition will prevent undertakings already within the market from profitably sustaining prices above competitive levels. Even an undertaking with a large market share would be unlikely to have market power in a market where there are very low entry barriers. An undertaking with a large market share in a market protected by significant barriers is likely to have market power.") See also Commission Notice on Market Definition, *supra*, n.28, at para. 24. ("The third source of competitive constraint, potential competition, is not taken into account when defining markets, since the conditions under which potential competition will actually represent an effective competitive constraint depend on the analysis of specific factors and circumstances related to the conditions of entry.")

[300] R A Posner, *supra*, n.27 at p. 11.

[301] Available estimates of the social cost of monopoly power are imprecise, but fall within a range of 1 percent and 13 percent of national income in the US per year. I Powell, 'The Effects of Reductions in Concentration on Income Redistribution', (1987) 69 1 Review of Economics and Statistics 75.

[302] As *Oscar Bronner* noted: "In order for refusal of access to amount to an abuse, it must be extremely difficult not merely for the undertaking demanding access but for any other undertaking to compete. Thus, if the cost of duplicating the facility alone is a barrier to entry, it must be such as to *deter any prudent undertaking from entering the market*." (Emphasis mine) *Oscar Bronner GmbH & Co. KG v Mediaprint Zeitungs* [1998] ECR I-07791. [1999] 4 C.M.L.R. at 66.

[303] See Para. 10.15 (Recognising that IPRs often do not confer monopoly power, since owners hold fragments of the entire technology required in the market) However, whether this will actually be so will depend on the competition policy model Singapore adopts.

[304] *Deutsche Grammophon v. Metro* Case 78/70 [1971] ECR 487 ("A manufacturer of recordings who has a protection right analogous to copyright does not however have a dominant position within the meaning of Article [82] of the Treaty merely because he exercises his exclusive right to market the protected articles") See *Sirena Srl v. Eda Srl* [1971] ECR 69 for a similar position on trademarks.; Tritton, p. 804. ("Generally IPRs do not play an axiomatic role in assisting an undertaking to achieve a dominant position in a relevant market.")

it to exclude others from making a clone. Only in this limited market defined by the Windows OS and its close technological substitutes does Microsoft have 'market power'. [305]When one considers the market for software, or even for rival OS, Microsoft enjoys little market power through its copyright. There will often be sufficient actual or potential close substitutes for the product to prevent abuse.[306] The Guidelines also correctly recognise that even if copyright creates barriers, they are often temporal.[307] On the other hand, where copyright owners block access to a key aspect of the technology, they may prevent effective actual or potential competition.[308]

However, courts and regulators in Singapore should be wary of two pitfalls. First, regard for entry barriers should not extend to those in hypothetical markets. In *Intergraph Corp. v. Intel Corp*, a US Court accepted that the 'relevant market' could be a notional market for innovation. If a company asserts its IP to retard innovation or chills development, this could be abusive even if the commercial market for the innovation/developments that have allegedly been

[305] In *Deutsche Grammophon, ibid,* the ECJ observed that the exercise of exclusive distribution rights under a sound recording copyright do not automatically translate to dominance; there must be some further showing of "the power to impede the maintenance of effective competition over a considerable part of the relevant market".

[306] US Antitrust Guidelines for Intellectual Property 1995, at para. 2.2, ("the US Antitrust Guidelines for Licensing and Acquisition of IP, issued jointly by the FTC and Antitrust Division of the DOJ, specifically reject the market power presumption: The Agencies will not presume that a patent, copyright or trade secret necessarily confers market power upon its owner. Although the intellectual property right confers the power to exclude with respect to the specific product, process, or work in question, there will often be sufficient actual or potential close substitutes for such a product, process or work to prevent the exercise of market power"); P E Areeda *et al*, *Antitrust Law: An Analysis of Antitrust Principles and their Application*, Vol IIA, (Boston: Little Brown, 1995) at 119 (stating that the uniqueness of a product is only a concern if it is connected with a demand advantage.)

[307] CCS Draft Guidelines, *supra*, n. 1, at para. 10.15. ("Where IPRs constitute a barrier, it does not always imply that competition is reduced. Although an IPR may constitute an entry barrier in the short term, in the long term a rival undertaking may be able to overcome it by its own innovation. The short term profit which an IPR can provide acts as an incentive to innovate and can thus stimulate competition in innovation.")

[308] *Ibid*, at para. 10.15. Thus rivals may be forced to sell a more expensive substitute or preclude them from selling any substitute at all. See H Hovenkamp *supra*, n. 27 at p. 10-2b2.

inhibited does not actually exist yet.[309] Similarly the EU Commission argued in *Microsoft (EU)*:

> "*If* Microsoft's competitors had access to the interoperability information that Microsoft refuses to supply, they *could* use the disclosures to make the advanced features of their own products available in the framework of the web of interoperability relationships that underpin the Windows domain architecture."[310]

This paranoia over harm to 'phantom markets' rests on the basis that innovation *may* be stifled, rather than on any convincing empirical proof it has. It is odd logic to justify interference to a copyright owner's exclusive right on speculative conjectures rather than credible proof. Regulators have no business pretending they know what outcomes the market wants, or should have.[311] Such speculative intervention imposes on copyright owners more than a duty to refrain from acting anti-competitively according to the general tenor of the Competition Act - it forces owners to promote competition at the expense of their own copyright. This tilts the balance too far in favour of the public.

Second, Singapore competition law should not regard network effects *per se* as barriers to entry.[312] In assessing the difficulty of entry, it is not enough simply to mention the existence of network effects. Network effects imply only

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[309] [1999] 195 F.3d 1346, 1999-2 ("Firms do not compete in same market, as required to support monopolization claim, unless, because of reasonable interchangeability of their products, they have actual or potential ability to take significant business away from each other. Sherman Act, § 2.")

[310] *EC Commission v. Microsoft* [2004] Case T-201/04 (emphasis added). See also *RTE v. Commission* 1995] ECR I-743, where the ECJ held that "It is sufficient to establish that the conduct is capable of having such an effect", at para. 4.

[311] Chapter III discusses studies which show that the market often picks the best products and streams of innovation perfectly well without any regulatory interference. Chapter IV shows that competition law is inept at picking winners, and should never attempt to do so.

[312] CCS Draft Guidelines, *supra*, n.2, at para. 3.12. (The Guidelines explain that "network effects occur where user's valuation of the network increase as more users join the network… network effects may make new entry harder where the minimum viable scale is large in relation to the size of the market." At para. 10.21-2.) Network effects are discussed more fully at Chapter III, Part IV.

that successful entry is difficult, not that it is impossible. Moreover, although network effects imply that the probability of successful entry is lower than it would be otherwise, they also imply that the payoff from successful entry is larger than it would be otherwise.[313] The question must then turn upon whether there has been a price increase or some evidence of innovation being prejudiced. Price increases[314] and stifling of innovation, particularly in potential markets,[315] are controversial indicators of consumer harm. Prices deviations from marginal cost be due to increase in demand for copyright content from network externalities rather than consumer exploitation.[316] This is graphically represented in **Fig 7**. Network effects operate to make the product more attractive,[317] increase the demand for the product The demand curve, D_1 shifts outward as demand increases to D_2, resulting in higher price, P_2 but also output Q_2. This price increase is therefore the result of conscious consumer choice rather than exploitation by the copyright owner.

[313] R A Cass and K A Hylton, 'Preserving Competition: Economic Analysis, Legal Standards, and Microsoft' in D S Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*, (Boston: Kluwer Academic Publishers, 2002) at 447.
[314] Since a price increase may be as likely to come from an increase in consumer demand as by a unilateral attempt to exploit customers. The former cannot be anticompetitive, since it merely reflects the greater value consumers now place on the network, because more users have joined, or because more compatibles are available, or that the quality of the platform itself has increased. See Chapter II, Part III.B.
[315] See Chapter II, Part IV.
[316] Chapter III addresses in detail the consequences of relying of this popular measure as a goal of competition policy in digital markets.
[317] Increased network effects could mean greater interoperability between users in the network, a greater variety of complementary products produced for the network and a better system of after-sales support.

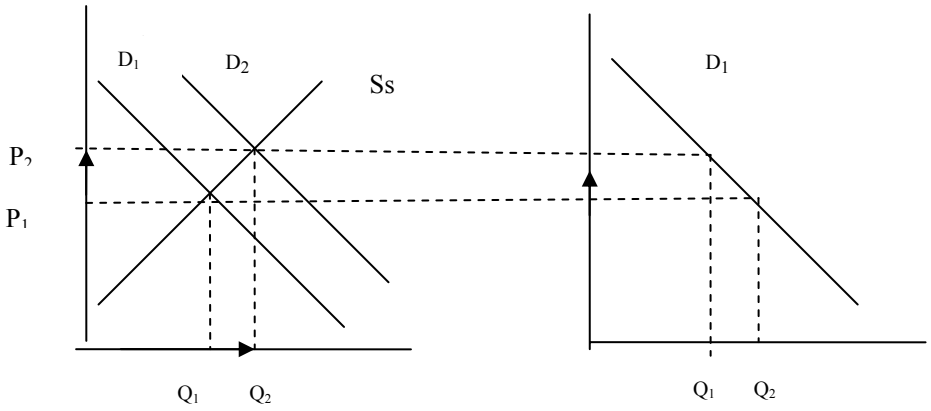

Fig.7: The diagram on the left shows a price increase due to increase demand from network effects; the diagram on the right shows the same price without any output increases characteristic of abuse of dominance cases which competition authorities are traditionally concerned about. Consumer welfare is harmed in the second case only.

In sum, it is suggested that intervention should be restricted to actual markets, rather than potential ones. Further, regulators should be slow in drawing adverse conclusions from entry barriers caused by network effects until more research has been done to show conclusively that there is cause to believe otherwise.

III. ABUSE AND DIGITAL COPYRIGHT

In UK, 'abuse' occurs when the copyright owner "uses practices different from those *normally* adopted in the course of competition on the merits".[318] The difficulty in Singapore, having followed the UK, will doubtless be deciding what 'normal' is.[319] As the Guidelines made clear, refusals to license are exclusionary

[318] The Chapter II Prohibition (OFT 403) Para. 2.3. (Emphasis mine)

[319] Section 47 mirrors Article 82 of the EC Treaty and Section 18 of the UK Competition Act 1998 in elaborating on two different concepts of abuse. (See Para. 10.23 and 10.28.of the Guidelines, *supra* n.2) Provisions (a) and (b) of the UK and EU legislation illustrate the first, narrower concept of exploitative abuse, where the dominant undertaking uses its market power to extract supernormal profits from customers through unfair pricing and limiting supply. A second, broader

practices,[320]and may be caught under Sections 47(2)(a) prohibiting "predatory behaviour"[321] or (2)(b) prohibiting conduct which limits "production, markets or *technical development* to the prejudice of consumers".[322] The latter may be directed at conduct which, although does not eliminate rivals, nonetheless prevents rivals from offering consumers a new product for which there is a ready demand.[323]

A study of cases in the EU and US reveals that refusals to license broadly give rise to two forms of anticompetitive 'abuse'. In the context of digital copyright, the first occurs where refusals to license allow the content owner to leverage its market power from the primary content market onto a secondary market which uses the content as an input. The second form of abuse arises where the content owner refuses access to components essential to compete in either the primary or secondary market. Cases, even within the same jurisdiction, have taken different approaches to deciding when a refusal amounts to 'abuse'. This chapter

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concept of exclusionary abuse seen in provision (c) and (d) prohibit conduct attempting to exclude competitors from markets, such as discriminatory treatment and tie-ins. See for an excellent exposition. See S D Anderman, *EC Competition Law and Intellectual Property Rights*, (Clarendon Press: Oxford, 1998) at p.180. Note, however that there is no parallel to the prohibition on excessive pricing in Singapore. The position here is that general regulators (as opposed to sector specific ones) are not equipped to determine the 'right' prices undertakings should charge, preferring instead to let market forces decide. In light of the considerable pricing problems faced by UK regulators, as renown as they are for their innovative RPI-X approach, there is much to commend for Singapore's non-interventionist approach.

[320] Paragraph 10.28, *supra*, n.2.

[321] It is a novel addition not found in the EU or UK legislation. As discussed earlier, refusals to license are predatory because by denying access to rivals or customers, copyright owners may eliminate them from the relevant market. See Chapter II, Part I.

[322] Emphasis mine. The Guidelines state that this means "slowing innovation". CCS Draft Guidelines, *supra*, n.2 at para. 3.3. However, the distinction between the various parts of Section 47 may be academic. EU courts have unequivocally stated their reluctance to be limited by the categories of misconduct listed. Indeed, they and have explicitly expanded the categories of abuse under Article 82 to include refusals to deal (*Commercial Solvents v. Commission* [1985] 1 CMLR 481) and license (*Magill, supra*, n. 50). Section 47, by following in the use of the permissive 'may' suggests that the categorisations are merely illustrative, and do not in any way restrict either the Court or Commission from including new situations where the goals of competition policy may be infringed.

[323] *EC Commission v. Microsoft* , *supra*, n. 50.

aims to resolve some areas of inconsistencies, and propose an approach that takes into account important considerations in digital copyright markets.

A. *Leveraging Copyright*

Refusals to license are effective tools for leveraging.[324] Copyright owners may be able to leverage simply because they were the first to enter a market with little existing competition. They then maintain their market power by refusing access to their content that may prevent rivals from offering new products in downstream markets. Alternatively, owners may have competed successfully to gain dominance, but have since stagnated in their efforts to innovate. Instead, they use their market power to prevent more efficient competition from appearing. In either case, leverage tactics have three characteristics in common. First, the restrictive impact of the conduct is felt at the point removed from the source of power. Second, the effort to maximise monopoly returns makes them always *exploitative* in nature. Third, they restrict the competitive process through preventing rivals and customers to gain access, and are therefore *exclusionary*.

[324] Even at this threshold, terminology is problematic. Some US courts have found leveraging to violate antitrust laws merely by obtaining a competitive advantage in the second market, even in the absence of monopolisation. See *Kodak, supra*, n.3. Others require proof of owner's use of monopoly power in one market to obtain, or attempt to obtain, a monopoly in the leveraged market. *Alaska Airlines v. United Airlines* [1991] 948 F.2d 536 at p. 544. The EU seems to have adopted for the latter. In *Tetra Pak International SA v. Commission*, the ECJ prohibited a firm with dominant position in one market from engaging in anticompetitive practices in a second market where it did not enjoy dominant position if the second market has close associative links with primary market. *Tetra Pak International SA v. Commission*, [1994] E.C.R. II-755. Because is difficult to prove that a product is indispensable, the first approach offers plaintiffs better odds of success.

Unsurprisingly, the Guidelines presume leveraging to be anticompetitive.[325] In the digital copyright context, this may be because copyright's role in securing the owner's reward is expected to take place in the primary content market.[326] The owner may justify the need to refuse access in order to prevent competition by imitation. However, it should not need to extend its rights to secondary markets either to appropriate returns on its investment or to promote innovation, since it should have calculated its expected monopoly returns from the primary market alone. The presumption is that by extending the effects of copyright into the secondary market, the owner has acted beyond the scope of its copyright, and should be stopped by competition law.[327]The difficulty with using leveraging as a reason to condemn refusals to license becomes apparent in a study between two landmark cases decided in the US. They are excellent cases studies because though both share nearly identical facts but by a twist of judicial quirkiness, arrived at opposite outcomes.

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[325] CCS Guidelines, *supra*, n.2, at para. 4.3. (Stating that "leveraging market power from one market to another" may give rise to "concerns".) Note though that unlike the Singapore and the EU, leveraging cases in the US are treated as "attempted monopolisation", rather than monopolisation. However, in practice, characteristics are similar in substance. The US Supreme Court endorsed this in *Kodak* noting: "If Kodak adopted its parts and service policies as part of a scheme of wilful acquisition or maintenance of monopoly power, it will have violated § 2." *Supra,* n.3. at 482-83. "Wilful acquisition" or "maintenance of monopoly power" involves "exclusionary conduct," not power gained "from growth or development as a consequence of a superior product, business acumen, or historic accident."

[326] L A Sullivan and A I Jones, 'Monopoly Conduct, Especially Leveraging Power' in *Antitrust, Innovation and Competitiveness* (Oxford: Oxford university Press, 1992) at p.172. (Suggesting that the defendant should have the burden of showing some efficiency rationale for leveraging, since it knows both the information on which it acted as well a the analysis on which it relied.)

[327] However, being merely a presumption, the owner may nonetheless exculpate itself through showing that some legitimate business justification for the refusal. *Image Tech. Services, Inc* v. *Eastman Kodak Co.* [1997] 125 F.3d 1195, 2 Trade Cases P 71,908 (*Kodak III*), at p.1217. ("Under current law the defense of monopolization claims will rest largely on the legitimacy of the asserted business justifications")

In *Image Technical Services Inc. v. Eastman Kodak Co.* (*Kodak*),[328] Kodak changed an existing policy and stopped selling patented and unpatented parts to independent service organisations (ISOs) that repaired Kodak copier equipment in competition with Kodak's service business. Their market relationship may be seen graphically in **Fig 7** below. The Court of Appeals adopted a modified version of the rebuttable presumption laid down by *Data General*.[329] It held that while there was a presumption of legitimacy in refusing to license, refusals that created or maintained a monopoly would be prohibited absent a valid business justification. This presumption of legitimacy could be rebutted either by evidence that the monopolist acquired the IPRs unlawfully, or "by evidence of pretext." [330] An IP owner was thus not entitled to employ its exclusionary right in ways that directly threatened competition. It finessed this argument by finding Kodak's reliance on the ground that only a minute percentage of its parts were covered by IP, and added that discontinuing supply to an existing customer gave further evidence of the "pretext".

[328] *Ibid*. The case history is complicated, having gone up to the US Supreme Court, and was sent back on remand. Parts of what *Kodak* stands for were added along the way. This dissertation discusses it in totality.
[329] See Chapter I, Part IV.
[330] *Data General Corp v. Grumman Systems Support Corp* [1994] 36 F.3d 1147 (1st. Cir.), n. 67 ("Neither the aims of intellectual property law, nor the antitrust laws justify allowing a monopolist to rely upon a pretextual business justification to mask anticompetitive conduct.").

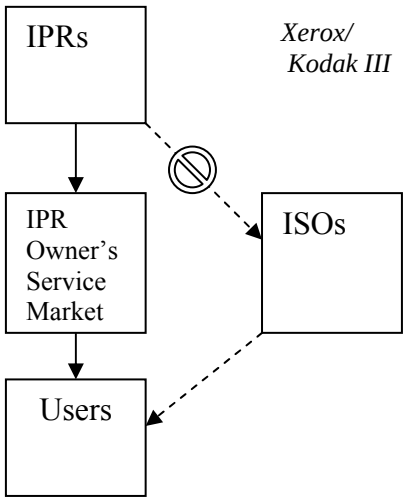

Fig. 8. Illustrating the relative positions of stakeholders in the market.

In contrast, under a market relationship similar to the one shown in **Fig. 8**, *In re Independent Service Organisations Antitrust Litigation* (*Xerox*),[331] the Federal Circuit found that Xerox did not violate antitrust laws by its refusal to sell patented replacement parts to ISOs that serviced and repaired Xerox copiers in competition with Xerox. The Federal Circuit concluded that Xerox had no obligation to sell or license patented parts and that Xerox's motivation for its unilateral refusal was irrelevant. While the Court acknowledged that an IP owner's right to exclude is not without limit,[332] antitrust intervention could only occur when:

(i) The defendant obtained its patent through fraud;

(ii) The infringement suit is objectively baseless and subjectively motivated by a desire to impose collateral, anticompetitive injury, rather than to obtain a justifiable legal remedy; or

[331] *Independent Serv. Org. Antitrust Litig. CSU* [[2000] 203.F3 1322 *cert*. denied, [2001] 531 US 1143.
[332] *Ibid*. at p.1326. Noting ("[I]ntellectual property rights do not confer a privilege to violate the antitrust laws.")

(iii) The patent was used as part of an illegal tying strategy to extend market power beyond the legitimate scope of the patent grant.[333]

1. *Rebuttable Presumptions*

The *Kodak* test of the legitimacy of the business justification proffered for the refusal to supply is an objective one hinges upon the effects of the dominant firm's behaviour.[334] Despite the pains the Court took to clarify the "pretext" test, it remains a difficult one to apply in practice. The test focuses solely on the net anticompetitive effects of IPRs, and suffers from two significant limitations. First, there is no indication how the balancing should be done. "Pretext" implies some form of subjective knowledge or intent. A subjective standard may be workable when used to identify rogues defrauding creditors under the separate entity doctrine recognised under Singapore company law.[335] In such cases, there is often a clear distinction between acceptable business conduct and what amounts to defrauding creditors.[336] However, it is not a feasible standard for identifying anticompetitive refusals to license, since the refusal may simply be a legitimate exercise of rights within the bounds permitted under copyright law. Virtually any

[333] *Ibid*, at p.1327-28.
[334] *Oscar Bronner* suggests that EC competition authorities and courts would accept many of the same business justifications as US courts, including "legitimate technical or commercial reasons" or "on grounds of efficiency." Opinion of Advocate General Jacobs, *supra*, n.45.
[335] The doctrine of separate legal entity is a fundamental concept in Singapore company law. Attributed to the seminal case of *Salomon v. Aron Saloman & Co. Ltd*. [1897] AC 22. As Walter Woon explained: "While organisationally and operationally the business was managed solely by Salomon, in law he and the company were separate persons." W Woon, *supra*, n.5 at p.46.
[336] Even on the facts of the controversial case of *Adams v. Cape Industries* [1990] 2 WLR 657, it is clear that a subjective intent to limit tortuous liability through subsidiaries is different from instances of avoiding a court order for specific performances (*Jones v. Lipman* [1962] 1 WLR 832) or contractual obligations not to compete (*Gilford Motor v. Horne* [1933] Ch 935). See W Woon, *ibid* at pp.52-72.

invocation of an IPR to justify refusals to license would be held "pretextual", since copyright by its nature distorts competition.[337]

Second, while distinguishing between relevant markets is useful in the 'dominance' limb, it is dangerous as an instrument to determine 'abuse'. As **Fig. 8** shows, exploitation of IPRs may often transcend more than one relevant market. *Xerox* points out that there can be no competition leveraging of monopoly power when a patent holder merely exercises its rights inherent in the IPR.[338] IP owners are not under any obligation to create competition against themselves within the scope of their IPRs.[339]

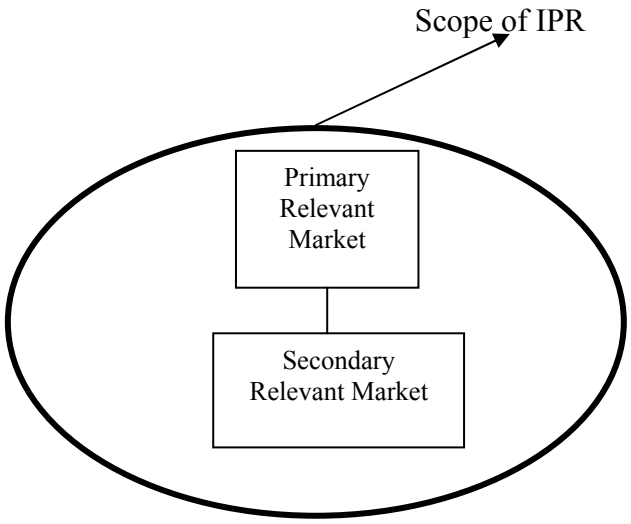

Fig.9 shows that the scope of subject matter covered by IPRs may encompass both the primary and secondary relevant markets under competition law.

The scope of a *legal* monopoly is defined by the claims of a patent, or normative boundaries of copyright,[340] not by what a court determines is the

[337] See Chapter I, Part IV, and Chapter II, III.A.
[338] *Xerox*, *supra*, n. 71.
[339] *Ibid,* at 1151. ("Where a patent has been lawfully acquired, subsequent conduct permissible under the patent laws cannot give rise to liability under the antitrust laws.").
[340] The Court explicitly intended this to apply to copyright as well as it noted that: The Copyright Act expressly grants a copyright owner the exclusive right to distribute the protected work by "transfer of ownership, or by rental, lease, or lending. Hence, if [it] pleases, may refrain from vending or licensing and content [itself] with simply exercising the right to exclude others from using [its] property." *Ibid*, at 1176.

relevant market. In contrast, the scope of an *economic* monopoly refers to a firm's power to control the price of a product in a properly defined relevant competition market.[341] Since the reward of an IPR is the right to exploit the entire field it covers, they can implicate multiple competition markets. Accordingly, there should not be liability for refusing to license within the market defined by its legal monopoly, regardless of the number of competition markets this implicates. By restricting this exploitation, the legitimate extent of exploitation may be eviscerated. The failing of the *Kodak* test lies in assuming that IPRs could create economic monopolies that fit neatly into competition law markets.[342] In doing so, it overlooks the critical distinction between a *legal* monopoly and *economic* monopoly

In sum, under the *Kodak* test, it may be impossible to know what market the products incorporating the technology will be. It is equally uncertain whether these products, if successful, will define their own market. For this reason, it may be frequently difficult to tell whether two firms are competitors in a relevant market, or indeed, what the relevant market should be.[343]

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[341] *Ibid*, at 1135

[342] This is evinced by *Kodak II*'s reasoning "that power gained through some natural and legal advantage such as a patent, copyright or business acumen can give rise to competition liability if a seller exploits his dominant position in one market to expand his empire into the next market". *Kodak II*, *supra*, n.2.

[343] R C Lind and P Muysert, 'The European Commission's Draft Technology Transfer Block Exemption Regulation and Guidelines: A Significant Departure form Accepted Competition Policy Principles', [2004] 4 ECLR 181 at p.188.

2. *Copyright Immunity?*

While the *Kodak* test arguably tilts in favour of public access, the *Xerox* test suffers from being too skewed in favour of the owner. *Xerox* limits access to three narrow exceptions to a general immunity rule. On closer scrutiny, these exceptions appear problematic. First, enforcing a fraudulently granted IPR is not a competition law exception to the right to exploitation, since there is no valid IPR to speak of. Second, abusing the legal process and using the IPR as part of an illegal tie both share common roots in patent misuse and abuse of dominance under EU law. However, it is difficult to see any rational basis for limiting it to such narrow grounds. Third, while it is well settled that tying can amount to patent misuse, it is difficult to see how it can be the only anticompetitive situation in where competition law should intervene. Anticompetitive abuses of IPRs cover wide range of conduct, such as resale price maintenance clauses, territorial agreements and predatory pricing. All of these may well harm competition; none of them would be caught under *Xerox*'s narrow rule. Against an otherwise broad immunity, this gives a virtually unfettered right of an IP owner to refuse to license. It is therefore too under-inclusive to be effective even for sector-specific regulation.

Given the ambiguous effects of alleged anticompetitive IP conduct, US courts have traditionally adopted the 'rule of reason': balancing the impact on economic incentives to innovate against consumer harm from anticompetitive effects.[344] Without adopting the same label, EU courts have also been conscious

[344] *United States v. United Shoe Machinery Co.* [1918] 247 US 32

to incorporate balancing measures into their analysis.[345] On occasions, courts have botched up the balancing process, paying lip service to access or incentives and deffering to the other with little or no sound economic reasoning.[346] However, by skirting the balancing process completely in favour of *per se* rules, the Court makes an unjustifiable departure from good legal sense. In this regard, *Xerox* has upset that traditional balance in a way that has disturbing implications for the future of competition policy in digital industries without necessarily encouraging the innovation process.[347] Indeed, turning the *Xerox* argument on its head, regulators may argue that the scope of copyright conferred is *smaller* than the relevant competition law market. [348] This may well be the more correct result, since copyright confers monopoly over products rather than markets.

Despite the benefit of hindsight, determining liability in leveraging cases will likely be as much a challenge for Singapore courts, not least because economic theory is undecided about its effects on competition. Economists have long been sceptical that leveraging could be either feasible or profitable. Leveraging often double-counts monopoly power, because it assumes that the monopolist increases its power through the leverage, when in reality the monopolist has only one source of monopoly power unaffected by leveraging- in

[345] *Oscar Bronner supra,* n.47 at 76 ("In assessing such conflicting interests particular care is required where the goods or services or facilities to which access is demanded represent the fruit of substantial investment. That may be true in particular in relation to refusal to license intellectual property rights. Where such exclusive rights are granted for a limited period, that in itself involves a balancing of the interest in free competition with that of providing an incentive for research and development and for creativity. It is therefore with good reason that the Court has held that the refusal to license does not of itself, in the absence of other factors, constitute an abuse.")
[346] See Chapter IV, Part IV.
[347] D J Gifford, 'Developing Models for a Coherent Treatment of Standard-Setting Issues Under the Patent, Copyright, and Antitrust Laws' (2003) 43 IDEA 331
[348] See discussion in Chapter II, Part IV.A.

the market where it has its first monopoly.[349] For example, Microsoft may extend its monopoly power into the office applications market. If Microsoft then required each customer to buy its Office XP applications software with its Window XP OS, or increases the price of Office XP, its profits would not increase. This is because the demand curves of both products share a positive relationship. If Microsoft exploits its consumers in the Office XP market, the quantity demand of Office XP will fall. At the same time, since the consumers in Windows XP market will also fall due to contracted demand as the Microsoft 'package deal' becomes less attractive. In sum, Microsoft can only earn monopoly profit if it sells one product competitively. Further, Microsoft can only crowd out rivals that sell to customers not using Windows. But that is only because it has competed "on the merits" and won, something which Singapore competition law encourages.[350] Clearly then the catchword for Singapore courts and regulators is – "caution".

B. *Digital Copyright: An Essential Facility?*

The essential facilities doctrine (EFD) imposes the most far-reaching obligations on copyright owners.[351] The focus of an EFD inquiry is not on the *conduct* of the firm, but rather on the *structural* conditions of the relevant market,

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[349] S J Liebowitz and S E Margolis, *Winners, Losers & Microsoft*, (Oakland: The Independent Institute, 2000) at p. 249.

[350] CCS Guidelines, *supra*, n.2. An observation may also be made that it is one thing to say Microsoft, by tying its dominant Windows OS to Office applications cannot extract a higher monopoly rent today than it could for Windows alone. It is another to assert that this tying is competition "on the merits". In the longer term, this strategy is a plan to drive out competing applications programs so that the Windows OS is more assured of continuance of its market dominance.

[351] For a good discussion of essential facilities in the intellectual property context, see T I Donahey, 'Terminal Railroad Revisited: Using the Essential Facilities Doctrine to Ensure Accessibility to Internet Software Standards', (1997) 25 AIPLA QJ 277; D McGowan, 'Regulating Competition in the Information Age: Computer Software as Essential Facility under the Sherman Act', (1996) 18 Hastings Comm. & Ent. L.J. 771.

typically "bottleneck" situations, where the copyright owner controls a 'facility' which is indispensable to its competitors and refuses to grant access to it. [352] It eschews copyright's rationale for protecting market power, and imposes a duty to deal fairly with rivals, or continue a relationship once it has begun.[353] Access must therefore be giving on reasonable and non-discriminatory terms. Further, the EFD is most likely to condemn copyright in precisely those circumstances in which intervention is least defensible: the more an invention is unique, valuable, and difficult to duplicate, the greater is the obligation to share it.[354]

The EFD grew out of a number of cases in which a vertically integrated company had exclusive control over some facility, and used that control to gain an advantage over competitors in an adjacent or downstream market. [355] The *locus classicus* is *MCI Communications Co. v. AT&T* (*MCI*).[356] Essentially, the owner denied access to a non-duplicable facility that it controlled, where it was

[352] P E Areeda *et al*, *Antitrust Law: An Analysis of Antitrust Principles and their Application*, Vol IIA, (Boston: Little Brown, 1995) at pp.650-51.
[353] *Oscar Bronner*, *supra*, n.47 122. ("[I]n certain cases a dominant undertaking must not merely refrain from anti-competitive action but must actively promote competition by allowing potential competitors access to the facilities which it has developed.") See also *United States v. Terminal R.R. Assn*., [1912] 224 US 383.
[354] A B Lipsky, Jr. and J G Sidak, 'Essential Facilities', (1999) 51 Stan. L. Rev. 1187 at 1219.
[355] The EU Commission has defined an essential facility as a "facility or infrastructure which is essential for reaching customers and/or enabling competitors to carry on their business, and which cannot be replicated by any reasonable means". Notice on the Application of the Competition Rules to Access Agreements in the Telecommunications Sector [1998] O.J. C265/3, August 22, 1998, at para. 68. A wide variety of facilities have been found to be essential. EC competition law initially applied the EFD to port facilities, but later extended it to include ground handling services, telecommunications networks, oil and gas pipelines, television listings information, computer reservation systems and most importantly, IPR. See Richard Whish, Competition Law, 4th Edition, 2001 at p. 622. US courts have found a group of railroads jointly owning a key bridge that refused access in breach of the doctrine. *United States v. Terminal R.R. Assn. ibid*. In *Otter Tail*, the public utility owning all the transmission lines into a municipality refused to allow the municipality to 'wheel' power over those lines from outside plants because the utility itself wanted to provide power to the municipality. *Otter Tail Power Co. v. United States* [1973] 410 US 366.
[356] [1983] 708 F. 2d at 1081.

feasible to grant it.[357] Refusal to grant access to an essential facility without objective justification or granting access only on discriminatory terms represents an anticompetitive abuse. While the *MCI* Court did not discuss this directly, US cases have thus far limited the doctrine to foreclosure of competition in the downstream market or where the refusal helped the owner to acquire or maintain a monopoly in that market.[358] The 'exceptional circumstances' test developed by European courts are broader.[359] Section 47 and Article 82 are not as limited as Section 2 since their prohibition is directed toward a broader concept of 'abuse'. This conceivably includes using the essential facilities to prevent rivals entering or remaining in the primary market.[360] As the European Court of Justice (ECJ) in *IMS Health* explained:

> "Four concurrent conditions are necessary and sufficient to find that the refusal by a copyright holder in a dominant position is abusive: the product protected by copyright must be indispensable to compete in the secondary market, the refusal to licence copyright must prevent the emergence of a new product for which there is a potential consumer demand, it must not be justified by objective considerations and it must be likely to eliminate all competition in the secondary market."[361]

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[357] The Seventh Circuit designed a four step test to determine whether access should be granted: (1) control of the facility by the monopolist (2) the rival's inability practically or unreasonably to duplicate the essential facility (3) denial of the use (4) feasibility of providing the facility.

[358] *Otter Tail* and *MCI* both had such a characteristic. Hovenkamp *et al* argue that so does *Aspen* on the grounds that primary market access "could open the door to all sorts of claims in which competition is not really at stake.", see H Hovenkamp *supra,* n. 27, at §13.3.

[359] The test stemmed from *Volvo*'s recognition of liability through "arbitrary refusals" to supply spare parts based on design rights as abuse under Article 82. As the Court explained, this included "arbitrary refusal to supply replacement parts to independent repairers, the fixing of prices for spare parts at an unfair level or a decision no longer to produce spare parts for a particular model even though many cars of that model are still in circulation." *Volvo*, *supra*, n. 32. at pp.135-36.

[360] J S Venit and J J Kallaugher, 'Essential Facilities: A Comparative Approach', (1994) Fordham Corp. L. Inst. 315, at p.333. (Stating that: "In the United States the essential facility doctrine focuses on effects in markets where a firm holds market power subject to control under Section 2. The Article 86 [now Article 82] cases, in contrast, appear to apply the concept in a monopoly leveraging context without extensive consideration of the extent to which the dominant firms holds a dominant position in the downstream market.")

[361] *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG*, [2004] ECR 0000. (Stating that courts were entitled to take into account "other circumstances of exceptional character when assessing a refusal to supply.") See paras [38] and [52].

The European Commission in *Microsoft (EU)* noted that was no exhaustive checklist of "exceptional circumstances",[362] but that it was necessary to analyse the entirety of the circumstances and take a decision based on the results of a comprehensive investigation.[363] This makes the "exceptional circumstances" test malleable for both leveraging situations discussed above, as well as EFD situations here. [364] However, the line between the two categories is not a bright one. EFD situations may involve horizontal requests for access and use of content from rivals in the same content market,[365] but it may equally involve vertical requests by downstream derivative users that may also be competing with the content owner there.[366]

While there is nothing within the EFD that inherently derails innovation, it will be seen that overbroad application can lead to perverse results where digital copyright is concerned. The issues here rest on the scope of the doctrine – when is a 'facility' essential? What obligations does it trigger? The latter examines two situations: requests for primary market access where the copyright itself is the essential facility, and secondary market access, where IP is incidental to the essential facilities claim. Although there are many EFD cases, commentators have expressed surprise how little light these cases shed on these issues.[367]

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[362] *EC Commission v. Microsoft*, *supra*, n. 52, at para 555
[363] *Ibid*, at para 558
[364] European courts have treated the EFD as synonymous with refusals to license. J S Venit and J J Kallaugher, *supra*, n. 98 at p.333.
[365] *IMS Health*, *supra*, n. 97 *Aspen Skiing, supra,* n. 3.
[366] See for example, *Magill and Microsoft (EU), supra,* n. 50, *Kodak III*, *supra*, n. 67, *Xerox*, *supra*, n. 71. What an "objective justification" or something that would make granting access "not feasible" is a difficult question that cries out for an answer.
[367] P Areeda, 'Essential Facilities: An Epithet in Need of Limiting Principles', (1990) 58 Antitrust L.J. 841 ("You will not find any case that provides a consistent rationale for the (essential facilities) doctrine that explores the social costs and benefits of the administration costs of requiring the creator of an asset to share it with a rival. It is less of a doctrine than an epithet indicating some exceptions to the right to keep one's creations to oneself, but not telling us what

1. *Horizontal Access to Primary Market*

An essential facility may be an input - some component that must be used in providing the competitive product or service. EU and US law agree that the need must be substantial. Inconvenience or cost increase resulting from unavailability will not suffice.[368] Where deemed 'essential', the owner is entitled to raise a defence of objective justification similar to the case in leveraging.[369] Whether copyright itself may be a 'essential facility' is unclear. In *BellSouth Advertising v. Donnelley Information*,[370] BellSouth sued Donnelley for copyright infringement after Donnelley copied the organisation of its telephone "yellow pages." Donnelley counterclaimed because the Bell yellow pages were an essential facility to which it was entitled access. The Court held that

> "Although the doctrine of essential facilities has been applied predominantly to tangible assets, there is no reason why it could not apply, as in this case, to information wrongly withheld. The effect in both situations is the same: a party is prevented from sharing something essential to compete."[371]

In *IMS Health v. NDC*, the market relationship was similar. IMS divided Germany into 1860 'bricks', and claimed copyright in the brick structure. New entrants started using IMS's brick system until sued successfully for infringement of copyright. They complained to the Commission that IMS was obliged to grant

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those exceptions are."); C Ahlborn, *et al*, 'Competition Policy in the New Economy: Is European Competition Law up to the Challenge?' (2001) 5 ECLR 156, at pp.164 ("At present, both points are unclear as the essential facility doctrine is in a state of flux.")

[368] *Alaska Airlines, supra*, n. 65, at p.544-546. (Holding that the airlines computer reservation system was not an essential facility because airlines could compete without it, albeit at higher cost.); *Fishman v. Estate of Wirtz* [1986] 807 F. 2d 520, at 539-540.

[369] CCS Guidelines, *supra*, n.2; *Kodak*, *supra*, n.2; *Magill*, supra, n.50.

[370] [1988] 719 F. Supp. 1551 (SD Fla.), reversed on other grounds, 999 F.2d 1436 (11th Cir. 1993)

[371] *Ibid*, at 1566. While the court did not discuss the copyright infringement in the context of the essential facilities claim, since it had just concluded that the directory was copyrighted, it necessarily must have concluded that a copyrighted work could be an essential facility.

its competitors a compulsory license for this database under the EFD.[372] The ECJ refused to accept this argument, holding that access to primary markets would undermine the basis of the IPR. A graphical illustration may be seen in **Fig. 10**.

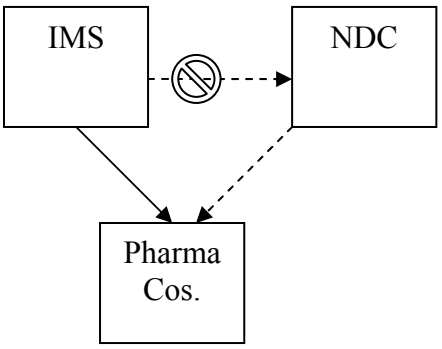

Fig. 10 The horizontal market relationship in *IMS Health* between competitors.

In *Intergraph Corp v. Intel Corp.*, Intergraph sued Intel after Intel cut off its supply of microprocessors and proprietary information.[373] Intergraph argued that access to Intel's chips was essential to its business. The District Court granted a preliminary injunction, finding that Intel's IPRs related to its chip architecture were essential facilities. The Federal Circuit reversed the decision, and limited the EFD to situations where the owner and third party competed in the downstream market which required access to that facility. It reasoned that the gravamen of the EFD rested on an attempt to gain an unfair advantage in downstream markets. Since Intel and Intergraph were not competitors in that market, there was no antitrust liability.[374] In *Intergraph* and *IMS Health*, the plaintiff's claims seem to founder primarily on obtaining or continuing privileged access not provided to

[372] *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG*, Commission Decision of 3 July 2001, at 18-19, 22 at 25.
[373] *Intergraph Corp. v. Intel Corp.*, [1998] 3 F. Supp. 2d 1255 (ND Ala). Intergraph made computer workstations using Intel architecture and Intel microprocessors, and had threatened to sue Intel's customers for violating Intergraph patents, which triggered Intel's obligation to defend those customers by threatening to stop supplying Intergraph with chips or technical assistance unless Intergraph dropped its patent suit. .
[374] See also *Aldridge v. Microsoft Corp*, [1998] 995 F.Supp.728 (SD Tex.)

anyone seeking it. Thus, while access may be been 'essential' to the plaintiff's business model, in both cases, it did not qualify as an essential facility under the competition laws. More recently, *Trinko* gave the strongest indication that the EFD only applies to downstream market situations. The Supreme Court significantly limited the circumstances which antitrust law may compel access to infrastructure, expressing concern with the negative impact on investments.[375]

The damage that the EFD can cause is especially acute in digital copyright markets, where appropriability is a critical factor in inducing investment. These markets may be surprisingly dynamic, and find ways around many apparent bottlenecks.[376] Catalysed by the presence of strong financial and technical players, there is a high tendency towards radical innovation which 'leap-frogs' over blocking technology. However, there is always the temptation of a quick fix, and the immediate results of immediate access in terms of falling prices and increased output may be too hard for courts and regulators to resist.

In *Microsoft (US)*, the court found that because competitors cannot feasibly duplicate Windows, there is a strong presumption that its APIs should be treated as essential facilities, though the label was not used.[377] It is plausible; even

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[375] *Trinko*, *supra*, n.6.

[376] For example, having failed to obtained a licence for interoperability with Apple's music store, Real developed its own codes which made interoperation possible. A Salkever, 'A Bitter Apple Replay?', (14 October 2004) BusinessWeek Online at: http://www.businessweek.com/technology/content/oct2004/tc20041014_9962_tc056.htm

[377] *United States v. Microsoft*, 84 F. Supp. 2d 9, PP 18-29 (D.D.C. 1999) (Findings of Fact) at p.37. (According to the Court, there were "no products, nor are there likely to be any in the near future, that a significant percentage of consumers worldwide could substitute for Intel-compatible PC operating systems without incurring substantial costs. Furthermore, no firm that does not currently market Intel-compatible PC operating systems could start doing so in a way that would, within a reasonably short period of time, present a significant percentage of consumers with a viable alternative to existing Intel-compatible PC operating systems.") C Ahlborn *et al*., *supra*, n. 105, at 159 ("These new economy industries are particularly prone to application of the essential facilities

likely, any refusal to license APIs required to develop a new OS or compatible products would be insurmountable. [378]Even if there was doubt about market competitiveness, the existence of other operating systems such as UNIX, Linux and Netware and the supporting applications software that run on them, confirms that it is feasible to develop OS as alternatives to Windows. If the creation of an alternative to Windows was technically and economically feasible, then the main condition under the *MCI* test for qualification as an essential facility would unlikely be met.[379]

It is submitted that copyright cannot itself constitute an essential facility. The EFD is premised on the fact that the facility is a structural requirement for access, thus possessing the characteristics of a natural monopoly. While the EFD has been successfully applied to regulated natural monopolies where the owner uses its market power to suppress competition in a downstream market, copyright is rarely coextensive with such monopolies. To the extent that they prevent competition, it is simply part and parcel of the incentives conferred by copyright. Hence, the essential facility cannot *itself* then be said to have been illegally monopolised, if it was legally granted the monopoly *ab initio*. As John Temple Lang put it:

"In a single market situation, something that is necessary to compete can

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doctrine because they "produce for markets that exhibit 'network effects'; that is, their products are more valuable to each user if more people use them.").

[378] J E Lopatka and W H Page, 'A (Cautionary) Note on Remedies in the *Microsoft* Case', (1999) 13 Competition 25 at pp. 27-28.

[379] R. C Romaine and S C. Salop, 'Slap Their Wrist? Tie their Hands? Slice Them Into Pieces? Alternative Remedies for Monopolization in the *Microsoft* Case', (1999) 13 Competition 15, at pp.17-18 (Distinguishing between two possible licensing remedies: 'compulsory licenses' and a "one-time licensing auction." The latter would not require the sharing of newly developed IP over a long period of time because of the one-time nature of the entitlement). See also S Lohr, 'On Breaking up Microsoft Into "Baby Bills", N.Y Times, Mar. 5 1999, at C2.

> only be a competitive advantage…. (in contrast, the EFD) … applies in two-market situations because a competitor in the downstream market that gains control of a necessary input is not offering a better or a cheaper product in the downstream market, but only getting power to harm consumers in that market by shutting out its competitors."[380]

The illegality alleged in EFD situations must therefore be confined to vertically related markets. Little sympathy should be given to a complainant who has taken a short cut to producing its work by making unfair use of the owner's content, especially when the two works are likely to compete. Indeed, this is nothing more than recognising of the essence of *copy*right.[381] Easy access may discourage competitors from developing alternative competing facilities. At the end of the day, it is better to have supply by a monopolist than no facility at all.[382] To grant access without the normal prerequisite that the owner has sought to expand the scope of the right beyond its copyright would be revolutionary.

2. *Vertical Access from Secondary Markets*

In contrast to the more cautious approach taken with regard to requests to access primary markets, the European courts have uniformly condemned refusals to supply downstream customers.[383] Such refusals are considered anticompetitive because market entrants would have to enter into both markets to compete. This may also have an anticompetitive effect if it creates a cost disadvantage for

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[380] J T Lang, 'Anticompetitive Abuses under Article 82 Involving Intellectual Property Rights', paper presented at the Eighth Annual EU Competition Law and Policy Workshop, The Robert Schuman Centre for Advanced Studies, European University Institute, 6-7 June 2003.
[381] D I Bainbridge, *Intellectual Property*, (5th Edition) (Essex: Longman, 2002) at p. 13.
[382] V Korah, 'The Interface Between Intellectual Property And Antitrust: The European Experience' (2002) 69 Antitrust L.J. 801
[383] *Commercial Solvents*, *supra*, n.62. According to Temple Lang, the principle of a general duty of dominant companies to supply was so well-established in the EU that it was not necessary later to distinguish essential facility cases from other cases of exclusionary abuse. J T Lang, 'Defining Legitimate Competition: Companies' Duties to Supply Competitors and Access to Essential Facilities', (1994) 18 Fordham Int'l L.J. 437, 498 at p. 445.

entrants or small existing firms that were previously sharing secondary market firm capacity.[384] The exercise of copyright may increase rival's costs even if the owner may not be able to directly increase its price or restrict output itself. This is because the resulting increase in costs of producing substitute products may force competitors to raise their prices and limit their output, thereby also harming consumers. Empirical evidence also shows that in industries where a dominant undertaking has this power to raise rivals costs, there is a lower willingness to innovate by both parties.[385]

This anticompetitive refusal can work only if two conditions are present. First, the copyright owner must possess market power in the primary market. Without a large share of this market, the owner's decision to refuse to deal with downstream firms would not warrant the attention of competition law. Second, the anticompetitive mechanism requires large economies of scale. Only in this way will new entrants and existing competitors in the upstream face a cost disadvantage.

Digital copyright markets here raise three concerns. First, mandating sharing may undermine the incentive to innovation which copyright was given to promote. Second, content owners may seek to protect its own market interests

[384] If the cost disadvantage makes the entry or the continued existence of competing primary market rivals more difficult, the copyright owner has strengthened and maintained its market power. D W Carlton and M Waldman, 'The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries' (Working Paper No. 145, George J. Stigler Center for the Study of the Economy and the State, Univ. of Chicago, Mar. 2000) (Showing that there may be a direct monopoly maintenance effect if the competing suppliers of the 'tied good' that are driven out of business (or reduced to a small scale) are potential future competitors for the manufacturer's "tying good," a condition they claim may fit the facts of the Microsoft litigation. See also D W Carlton, 'A General Analysis of Exclusionary Conduct and Refusal to Deal - Why Aspen and Kodak Are Misguided,' (2001) 68 Antitrust L.J. 659.

[385] J B Baker, 'Fringe Firms and Incentives to Innovate' (1995) 63 Antitrust LJ 622, at pp. 636-639

downstream as a precursor to vertical integration. The initial loss in competition may be more than compensated for by consumer benefits *post*-vertical integration. Third, owners may refuse downstream access to prevent rivals there from integrating upwards and usurp of the owner's primary market.

(1) *Undermining Copyright*: The economic rent earned by owners may be necessary to provide the content in the first place. Opening access may reduce returns below the level necessary for recouping these costs. Potential creators may thereby be discouraged from competing in risky digital content markets if even upon winning, it becomes penalised. [386] In *Oscar Bronner*, AG Jacobs warned against a wide concept of essential facilities for reducing the incentive to the original investment, to duplicating it and requiring regulation over the price to be paid for access.[387] The EFD cannot properly be applied to require licensing of copyright merely because in the absence of such a licence, rival firms will be unable to compete with the product incorporating the IP.[388] Similarly, in *Trinko*, the US Supreme Court recognised the erosion of incentives if the EFD were recognised and actively used.[389] It is likely that what was said in the context of access to telecommunications networks applies to digital copyright.

[386] In *Microsoft (EU)*, *supra*, n. 50, Microsoft justified its refusal to provide interface information because it need to "protect the outcome of billions of dollars of R&D investments in software features, functions and technologies. *This is the essence of intellectual property rights protection.* Disclosure would negate the protection and eliminate future incentives to invest in the creation of intellectual property." Commission Decision of 24.03.2004 (Case COMP/C-3/37.792 Microsoft)), at para.709.
[387] V Korah, *supra*, n. 118.
[388] P D Marquardt, M Leddy, 'The Essential Facilities Doctrine and Intellectual Property Rights: A Response to Pitofsky, Patterson, and Hooks' (2003) 70 Competition L.J. 847
[389] *Trinko, supra*, n.6 at 883. ("The Sherman Act is indeed the 'Magna Carta of free enterprise,' … but it does not give judges *carte blanche* to insist that a monopolist alter its way of doing business whenever some other approach might yield greater competition.") See also footnote 151.

Here, digital copyright is pulled in opposite directions. On one hand, cases like those in the EU require a more onerous standard to be met for illegalising the use of IP. In *Magill*, the ECJ held that the input had to be indispensable for the production of a "new product" for which there was unsatisfied consumer demand.[390] On the other hand, it seems wrong that copyright owners are allowed to hide behind a regime that seems to have been corrupted by inhibiting access to digital content that fits uneasily into its traditional utilitarian justification over protecting literary, artistic, and musical works.[391] EU case law has repeatedly held that competition law cannot be used to address situations where judges think that such products do not deserve protection.[392] It is therefore ironic that EU courts have been the most fervent in persecuting allegations of abuse, particularly where copyright covers digital interfaces.

In attempting to reconcile these two competing ideals, EU law has required complainants to show that the owner has prevented rivals from offering a "new product" which it does not. Conceptually, this indicates that the owner's conduct falls outside the scope of its IPR, and application of competition law should be unobjectionable. The problem is that EU courts have not specified whether "new

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[390] *Magill*, supra, n. 50, at para.30. *IMS Health* and *Microsoft (EU)* subsequently confirmed this. This stands in contrast to the *Oscar Bronner* test for non-IP matter, which does not require the offering of a "new product". See *supra*, n.47.

[391] See Chapter I, Part II. *Bellsouth, supra* n.108. *Magill*, *supra*, n.50. See I Forrester, 'EC Competition Law as a Limitation on the Use of IP Rights in Europe: Is there a Reason to Panic?', Paper delivered at the Eighth Annual EU Competition Law and Policy Workshop, The Robert Schuman Centre for Advanced Studies, European University Institute, 6-7 June 2003, at pp. 6-7. ("The order in which TV programmes are to be shown during the forthcoming week is not something with intrinsic artistic value, nor was it a secret.")

[392] J Temple Lang, 'Intellectual Propety and Competition Policy – Mandating Access: The Principles and the Problems', British Institute of International and Comparative Law, May 2004, at p.5("Competition law should not be used to correct what are said to be defects in intellectual property law.") For an opposing view, see I Forrester, 'EC Competition Law as a Limitation on the Use of IP Rights in Europe: Is there a Reason to Panic?', Eighth Annual EU Competition Law and Policy Workshop, The Robert Schuman Centre for Advanced Studies, European University Institute, 6-7 June 2003, at p.15. ("The *Magill* and *IMS* cases can be seen as remedies to aberrations in the application of national copyright law.")

product" refers to something radically or merely incrementally different from what the copyright owner offers.[393] It is simple enough to identify a specific "new product" the TV guide in *Magill*,[394] which clearly could not be offered without access to the copyrighted listings owned by the defendants. However, in *Microsoft(EU)*, both the Commission and CFI simply held that Microsoft's refusal to disclose its APIs would prevent competitors from developing "new products" without specifying what they were.[395] Indeed, it is difficult to see what additional value access to Sun Microsystems could have since it was in fact producing a functionally identically substitute to Microsoft's work group server OS.

The danger here is that any copyright infringer can allege that the owner is the only source of materials required for the new product. It can then defend infringement proceedings with a countersuit under competition rules by pointing out that demand is not being met and justifying its infringement to meet that demand. If this 'back door defence' is allowed, IPRs will be eviscerated. In digital markets, niche markets spring up rapidly. Products may carve out speciality features, as portable MP3 players did from the existing audio entertainment market. Or else they may integrate separate features into a new product, as mobile phones with MP3 player features did. Given the rapidity of technological change,

[393] The *IMS Health* Court does make clear that it must be more than mere duplication. IMS Health, *supra*, 97, at para. 49.
[394] This would be a weekly TV magazine comprising the programmes of all TV channels.
[395] *Microsoft*, Commission Decision, at supra, *supra* n.128, at para. 694 and 700; Court of First Instance *at supra* n.50. For avoidance of doubt, the CFI did not hold that Microsoft's refusal to disclose APIs would prevent 'new products' for the purposes of demonstration of exceptional circumstances under Article 82. The proceedings before the CFI leading to the President's order of 22 December 2004 were for interim relief. The only issues were (1) whether Microsoft established a prima facie case that the Commission was wrong on the law and its application to the facts (2) the harm to Microsoft of having to implement the Commission's orders immediately gave cause to overrule them. On the issue of diminishing consumer choice as a result of non-interoperability, see Chapter III, Part IV.

these new markets may fail quickly, either because the product is functionally deficient, or as in the case of G3 mobile technology and multi-media messaging, prematurely ahead of consumer needs. In each case, the defendant may allege that the owner controls an essential resource, and is not providing new consumer demand in these markets, and gain easy access without showing real and lasting consumer harm.[396]

Ideally, innovation by one company spurs innovation or other pro-competitive reactions by rivals in an attempt to maintain their competitive position. Allowing those rivals access to the innovator's IP simply by declaring themselves beaten runs the risk of short-circuiting that dynamic process. Indeed, where ownership of the allegedly essential facility is protected by IPRs, courts have been especially reluctant to order compulsory licensing for fear of undermining the incentives to innovate built into the IP system. They have distinguished between *privileged* and *essential* access. In *David L. Aldridge Co. v. Microsoft Corp*,[397] it was alleged that the Windows 95 OS was an essential facility. However, the court rejected the argument, holding that the expectation to continue enjoying privileged access could not be justified since it was not available to the market as a whole to begin with.

The alternative is to require entrants to compensate developmental costs as well as rent reductions from increased ownership.[398] However, this approach presents administrative difficulties. Someone will have to determine the terms of a

[396] A Robertson, *supra*, n. 33, at 589.
[397] [1998] 995 F. Supp 728, 751-55
[398] For a discussion on the theoretical case of pricing access, see W J Baumol and J G Sidak, *Toward Competition in Local Telephony* (Cambridge, MIT Press, 1994).

compulsory licence. Courts must be concerned that the firm with the facility does not charge too high a price. The licence fee could be so prohibitive that access loses its practical significance. Simultaneously, courts need to be sensitive as there is no legal prohibition against firms to charge any price they like. If departure form this principle should be different just because the scarce resource is an input for its rival, then it must be debated and defended by those advocating it. [399]

Patents and copyrights are not about absolute monopoly. Third parties prepared to spend sufficient money and effort can independently create around the protected subject matter. Despite short-term gain to consumers in terms of price, quality and choice terms, use of the EFD could harm competition in the long term. In such markets, a second firm can only thrive on an artificial habitat created by the application of the EFD. The effect of the doctrine is hence to serve as an instrument for indirect price regulation of markets that are 'inevitable monopolies". In particular, the doctrine cannot create or preserve a market structure that will in turn stimulate competition and efficiency.[400]

(2) *Vertical Integration*: A vertically integrated monopolist can merge two complementary markets into one by selling an integrated product that incorporates the functionality of both markets. In *Microsoft (EU)*, product integration occurred where Windows XP and its media player were packaged together.[401] Sales of the

[399] D W Carlton and J M Perloff, *supra,* n. 26 at p. 668.
[400] M A Bergman, 'The Bronner Case- A Turning Point for the Essential Facilities Doctrine.' (2000) 21(2) ECLR 59 at p. 61.
[401] This is an example of tying as leveraging. In *Microsoft (US)*, Windows 95 operating system integrated Internet browsers. When two different products are sold in a single package, the ordinary antitrust response is a tying claim, regardless of whether they were complementary or not. However, once the defendant claims that the combined package works better than the two products did alone, the court must decide how to assess those claims of technological improvement, and how to weigh them against the loss of competition in the goods market that has been integrated

media player rode on popularity of the OS platform. This form leveraging-tying strategy may potentially drive out rival media player companies without the market penetration in the upstream market. These rivals may not be able to offer similar levels of interoperability even if they were willing to use the Windows OS, because Microsoft may use its copyright to block access to codes required for interoperability. The popularity of Windows may therefore move media player customers under the banner of Microsoft's product, not because its functions were better, but because of its integration with Windows. Rivals would therefore either have to enter both markets to offer a substitute or develop niche secondary markets for non-integrated products.

Yet, such vertical integration is the product of a skilful combination of technologies, and drives technological development. Consumer-driven demand for feature integration has had a major impact on corporate exploitation of copyright. Products without the newest integrated features will not only fail to command a premium price, they will quickly disappear from the market.[402] These features are time sensitive, and the copyright owner that can combine new features faster and better than its rivals will gain a substantial competitive edge and will often become dominant. It has been long accepted that copyright may be used as a business strategy to prolong the owner's first mover advantage, as well as to move more quickly up the learning curve in integrating different features. By allowing

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into the defendant's monopoly product market. In order to decide whether this technological change adversely affects competition, courts must undertake the difficult task of determining whether the change is a *bona fide* innovation, and if so what its effects are likely to be.

[402]C M Christiansen, *The Innovator's Dilemma - When New Technologies Cause Great Firms to Fall* (Harvard Business School Press, Boston, 1997) at p.165.

rivals to share access to copyright content, this crucial lead time may be lost.[403] Further, the problem with the EFD is that since most high technology goods go through a number of separate processing stages, almost any product market could in principle become subject to this kind of dispute. This explains why the concept of essential facility obligations is so threatening to business, and underlines the need for some form of discipline to control its application.[404]

The facts of EFD cases sometimes overlap with leveraging, where courts have generally been more willing to intervene, an imprudent regulatory attitude may conflagrate the two. It is important to note that the EFD differs from leveraging in three respects. First, the source of the monopoly power is scrutinised much more carefully than a simple monopoly. Not only do courts ensure that there is some justification for keeping the monopoly intact, they must also satisfy themselves that there is no reasonable way for competition to be accommodated without access. As a counterbalance to the stricter first requirement, courts appear to relax the second requirement of abusive conduct. Second, in EFD disputes, business justifications appear to be limited to situations where access would disrupt the monopolist's own business. In contrast, leveraging situations accommodate broader business justifications. Third, the EFD departs from its leveraging cousin in terms of remedies. Leveraging remedies begin with

[403] D L Rubinfeld, 'Antitrust Enforcement in Dynamic Network Industries', (1998) 43 Antitrust Bull. 859 (observing that "a dominant firm will have a legitimate interest in innovating and entering into complementary product markets, since (among other things) this will enhance the value of (its) product" and that such integration may create real efficiencies).

[404] D Ridyard, 'Essential Facilities and the Obligation to Supply Competitors under the UK and EC Competition Law' (1996) 17(8) ECLR 438, pp. 438-440. Indeed, some commentators have described the Windows API interface itself as an essential facility. See, M A O'Rourke, 'Drawing the Boundary Between Copyright and Contract: Copyright Pre-emption of Software License Terms', (1995) 45 Duke L.J. 479, at p. 547 ("By virtue of the operating system provider's monopoly power, its interface becomes an essential facility because access to it is necessary for others to compete.").

identifying the unwarranted advantage in the secondary market to find the corollary remedy limited to specific conduct. In contrast, the EFD presumes the remedy: reasonable and non-discriminatory general obligation to access all requesting access, without regard to the specific injury incurred by the complaining party in the second market. This requires some form of judicial supervision over the terms of access, which makes it administratively unattractive.

(3) *Defensive Leveraging*: In both *Microsoft* cases, a common justification raised was Microsoft's concern that its downstream rival might enter the primary OS market once its application protocol interfaces were disclosed. In *Microsoft (US)*, Microsoft expressed concern about the 'middleware' threat posed by Netscape Internet Browsers riding on Java technology to run applications which Microsoft's Windows OS provided a platform for. Similarly, in *Microsoft (EU)*, Sun Microsystems requested interface information required for its downstream workgroup server OS to fully interact with Microsoft's Windows OS. This may be seen in **Fig. 11**. Microsoft contended that this refusal was premised on its concern that Sun would then be able to use the interoperability it had provided to produce perfect substitutes to compete with its Windows OS. In neither case was this threat taken seriously.

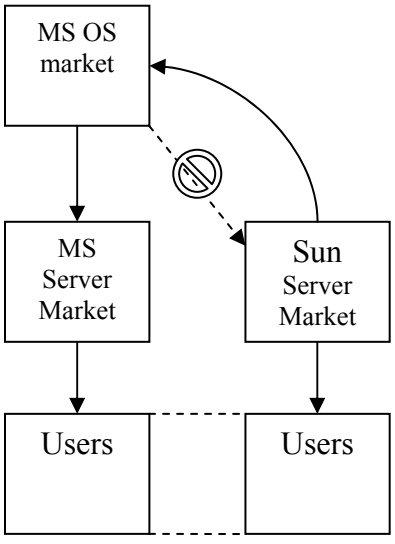

Fig. 11 'Defensive leveraging' in *Microsoft (EU)*

The problem with this view is that it ignores the fact that secondary market rivals may also be potential primary market rivals. After all, market definition is more a legal construct than a reflection of bright line distinctions on a production chain. Generally, mere exploitation of an industrial standard without regard for rivals has never been itself viewed as abusive under competition law.[405] A firm that has achieved a market standard by virtue of its investment in R&D and IP protection is normally entitled to continue to compete by exercising its exclusionary rights even in "aftermarkets." To find a refusal to licence abusive, something more must be shown by the competition authorities to allow the imputation of an abusive motive to the IP owner's conduct other than a refusal to supply or licence as such. It is appropriate to note that while the EFD requires open access, nothing guarantees that new membership into the primary market will automatically pass benefits of access to consumers. Indeed, by requiring communication of proprietary information between competing undertakings, competition law may well be trading exclusionary abuse to anticompetitive collusion.

3. *Limiting the Epithet: Suggested Principles*

Philip Areeda famously declared that the EFD is "an epithet in need of limiting principles," [406] arguing that it should not be used to force owners to

[405] R Myrick, 'Will Intellectual Property on Technology still be viable in a Unitary Market?' [1992] EIPR 298.

[406] P Areeda, *supra*, n. 105, at p. 850. (Arguing that "the so-called essential facility doctrine is one of the most troublesome, incoherent and unmanageable of bases for Sherman §2 liability. The antitrust world would almost certainly be a better place if it were jettisoned.") Perhaps because the essential facility doctrine is seen as a label to describe a factual situation, some commentators, especially in the U.S., have questioned whether this doctrine is necessary at all. This school of thought argues that refusals of access that increase or maintain market power are already subject to

surrender their investments simply because they resulted in a significant competitive advantage. Commentators like Areeda favour abolishing the doctrine outright.[407] A more moderate view proposes to use the EFD as a useful label to describe the factual posture of cases than a method of analysing competition cases.[408] Neither EU nor US law provides a legal definition of the EFD, and in both systems, its contours are still unclear. Both have often downplayed the use of EFD, to the extent of denying its existence except in the lower courts.[409] EFD cases have not addressed whether situations where the controller of an essential facility might provide access to some but not to all competitors or where not all competitors necessarily require access in order to compete would amount to an 'abuse'. [410] If the EFD has a role in the interface in Singapore, it is submitted that two conditions must be satisfied.

First, the EFD should be confined to secondary market application.

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attack as a group boycott, monopolization, or attempt to monopolize. See J R Ratner, 'Should There Be an Essential Facility Doctrine?', (1988) 21 U.C. Davis L. Rev. 327, at p.382.

[407] P Areeda, *supra*, n. 105; H Hovenkamp, *Federal Antitrust Policy: The Law of Competition and Its Practice, 2nd edn, (*St. Paul: West Publishing Co., 1999) §7.7. ("The so-called essential facilities doctrine is one of the most troublesome, incoherent and unmanageable of bases for Sherman §2 liability. The antitrust world would almost certainly be a better place if it were jettisoned…")

[408] J T Lang, *supra*, n. 119, at p.483 (noting that "[e]ssential facility cases involve basic principles [and the] concept may be merely a useful label... rather than an analytical tool"); P E Areeda *et al*, *Antitrust Law: An Analysis of Antitrust Principles and their Application*, Vol IIA, (Boston: Little Brown, 1995) at pp. 650-51 (stating that "[E]ssential facility' is just an epithet.... It is not an independent tool of analysis, but only a label-a label that beguiles some commentators and courts into pronouncing a duty to deal without analyzing the implications....").

[409] *Trinko*, *supra,* n.6 ("The Court's conclusion would not change even if it considered to be established law; the 'essential facilities' doctrine crafted by some lower courts…. we have never recognized such a doctrine, and we find no need either to recognize it or to repudiate it here.") In *Aspen Skiing*, the Court refused to explicitly consider the EFD even though it was a key part of the appellate court's reasoning. US cases have not expressly held that the EFD applies to IPR cases. In Europe, the EFD has never been expressly applied. Rather, case law has evolved in the form of a justification test under Art. 82. European jurisprudence teaches that refusals per se do not amount to abuse. Abuse only occurs where this denial drives competitors out of business and eliminates competition in a related market.: Commercial Solvents v. Commission; United Brands v. Commission. See however, D Geradin, *supra*, n.21 at p. 3. (Arguing that this is a "question of semantics", citing cases where refusals by dominant firms to competitors were found to be violations of Article 82).

[410] J B Kobak, Jr., 'Running the Gauntlet: Antitrust and Intellectual Property Pitfalls on the Two Sides of the Atlantic', (1996) 64 Antitrust L.J. 341, at pp. 354-54.

Copyright justifies an exclusive protection in the primary market in order to prevent copying. Appropriability does not take the form of a lump sum payment, but rather as an opportunity to market their goods without interference by free riders. In contrast, when downstream markets are also affected, the contribution through the creation of the intellectual property does not justify its abusive use for other purposes on a secondary market. In digital goods, the level of intellectual creation involved is low and copyright protects primarily the investment in their creation.[411] However, the role of copyright in ensuring returns on the owner's investment should not justify preventing competitors from competing in a separate market. To take a more expansive interpretation would strike at the core of copyright and stifle the incentives to innovate that both it and the competition laws are meant to protect.[412]

Second, the EFD should be confined to specific sectors where regulations expressly provide for it. This permits across-the-board rules to determine what constitutes an essential facility and when it should be subject to mandatory access. EFD policies may vary according to differing industrial needs. To the extent that this is true, application of EFD under a generic competition law immediately becomes suspect. Where complex issues about the 'reasonableness' of the terms of access arise, they can be dealt with most efficiently by industry experts. Sector-specific regulators have considerably more information and economic expertise than courts, and are better placed to determine the compensation to be paid for access to copyright content. Further, decisions on terms of access are so

[411] W R Cornish and D Llwelyn, *Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights* (4th ed, Sweet & Maxwell, 1999), at 766-767.
[412] P D Marquardt, *supra*, n.133.

inextricably linked to price that they are best handled in the context of proceedings to determine rates rather than liability. Competition law litigation is expensive, and the large number of suits that might be needed to remedy a problem industry-wide would incur enormous costs. In the context of copyright right exploitation in Singapore, such a body would take the form of the Intellectual Property Office of Singapore (IPOS). Even if IPOS is not directly responsible for administering EFD cases, it should be closely consulted by the Competition Commission of Singapore as they arise.

VI. EVALUATION

Copyright is not a baseball bat, whose legitimate use in the pitch is clearly distinct from an illegal swing at someone's head. While the existence of copyright may be clear enough, a neat categorisation of its effects as either harmful or beneficial are subtle. An open-textured Section 47 will be both boon and bane to courts seeking to apply it to digital copyright. While they will appreciate the flexibility it allows them, reconciling cases for present or future application may prove challenging. Opinion on whether sector-specific regulation precludes invoking of competition law remains mixed. However, it is submitted that duplicative analysis and the risk of inconsistent results under legal or economic theory militates against simultaneous application as an ideal. Endogenous checks such as copyright misuse are still too immature to provide a viable substitute to the detailed and well-established analysis offered by competition law. Until such a time that the scaffolding of competition law can be removed, copyright abuses

will still have to remain under its purview, even where this means upsetting the utilitarian balance which copyright seeks to preserve.

There is nothing objectionable to owners acquiring market power through copyright where it "renders them uniquely suited to serve their customers."[413] It has been observed that the measure of this market power must capture the dynamics of competition in digital markets. Price-cost measures and snapshots of market shares are inappropriate. Even measuring market power in dynamic analysis, network effects should not be treated as automatically raising anticompetitive alarm bells without convincing proof that it is also capable of reducing consumer welfare. The most influential companies may not necessarily be those that have made the initial technological breakthrough, but those currently steering its development. 'Dominance' should therefore be a finding made with great caution and circumspect.

The discussion on 'abuse' suggests that this will likely be a vexing area in the years ahead. Competition law generally allows firms to exercise their interdependent discretion to choose who they deal with. Indeed, it recognises that easy access to content may conflict with the *raison d'etre* of copyright, by lessening the incentives of the owner, or rival, or both to innovate. However, it is equally clear that refusals to license may be a precursor to leveraging, just as denying access where it is essential for viable competition may warrant antitrust attention. It is troubling that uncertainty persists over what constitutes an 'abuse'

[413] *Trinko*, *supra*, n.6 at 879.

in digital markets. This undermines the rule of law and expose commerce to undue legal risks[414] As a Member of Parliament put it:

> "The Competition Commission will administer the Act, and it is important that its rulings and decisions are *precise, unambiguous and timely*. Because all this has an impact on the way businesses are run and the costs and uncertainties they have to bear. Otherwise, the very objective of promoting Singapore as an attractive place to do business will be frustrated."[415]

It is submitted that if competition law is to develop a framework capable of containing the burgeoning reach of copyright without either eviscerating or further inflating it, those steering its development – courts and regulators - need to be absolutely clear what to do. This means that first, there must be a consensus at least within the jurisdiction what the goals of competition law are, and second, what framework to use to reach those goals. The reason why law at the interface is so easy to state, but so difficult to apply lies in the blunderbuss approach courts have taken in repeating rhetoric without articulating clearly its thought process. This is precisely what the next two chapters aim to do.

[414] T W Bell, 'The Common Law in Cyberspace', (1999) 97 Mich. L. Rev. 1746, 1754-55
[415] S Iswaran Singapore Parliamentary Debates, 19 October 2004 http://www.parliament.gov.sg/reports/public/hansard/title/20041019/20041019_S0004_T0006.html

CHAPTER III:
♦GOALS♦

I. INTRODUCTION

Antitrust policy cannot be made rational until
We are able to give a firm answer to one question:
What is the point of the law - what are its goals?
Everything else follows from the answer we give.

Richard Bork[416]

Digital copyright and competition law exist in a dynamic relationship. Just as the goals of competition law shape the boundaries within which copyright may be legitimately exercised, the goals of copyright law in turn shape the permissible avenues of competition law. Any analysis focusing on the goals of one regime to the exclusion of the other will miss half the truth. It is therefore necessary, in considering refusals to license, to understand what the goals of competition law are. But equally, the analysis should take into account the strategic interests of copyright owners.[417] Chapter III examines both perspectives.

There are at least three reasons for adopting competition law. Singapore has yet to indicate authoritatively which will guide the implementation of the Singapore Competition Act 2004.[418] First, competition law may exist to ensure diversity in the marketplace, the goal of Harvard School regulators. As Part II shows, regulatory intervention may be premised on the belief that concentration of

[416] R H Bork, *The Antitrust Paradox: A Policy at War with Itself*, 2nd edn, (Basic Books: New York, 1993) at p.50.
[417] B F Fitzgerald, 'Digital Property: The Ultimate Boundary?', (2001) 7 Roger Williams U. L. Rev. 47.
[418] It has been observed that the EU and US are also divided between and within jurisdictions. In this regard, courts have not contributed much to resolving this difficult issue. Judgements frequently begin and end an assessment of anticompetitive abuse of IPR on mere recitations of principles: after restating the terms of the statutory grant, courts make a finding that the facts require one law to trump the other without careful analysis of the goals underlying competition law. See H Hovenkamp *et al*, *IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property* (New York: Aspen Law, 2003) at pp. 45-9.

market power results in inefficiency and waste.[419] The solution is then to disperse market power through increasing the number of firms by growing the number of small or medium enterprises (SMEs) rather than allow an oligopolistic or monopolistic market structure. In endorsing the Harvard view, the Minister said: "It thus recommended that a generic competition law be enacted *to create a level playing field for businesses, big and small*, to compete on an *equal footing*. This will make for a more conducive business environment."[420] Dominant copyright owners may therefore be required to license its content if only to ensure rivals are given an opportunity to provide market competition as an ends in itself.

Competition law may be directed toward "efficient" conduct in the market. This takes two forms: static and dynamic efficiency. Part III considers the first under the Chicago School approach through the lens of price theory.[421] The goal of competition law will then be efficient allocation of resources by the market or production of goods at lowest cost.[422] Endorsing this view, the Minister stated, "Market competition spurs firms to be more efficient, innovative, and responsive

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[419] F M Scherer, *Industrial Market Structure and Economic Performance*, 2nd edn, (Chicago: Rand McNally Co., 1980) at pp. 437-8. ("There is an abundant evidence from case studies to support the view that actual and potential new entrants play a crucial role in stimulating technical progress, both as direct sources of innovation and as spurs to existing industry members.")

[420] V Balakrishnan, Singapore Parliamentary Debates, 19 October 2004 http://www.parliament.gov.sg/reports/public/hansard/title/20041019/20041019_S0004_T0006.html, (emphasis added)

[421] W H Page, 'The Chicago School and the Evolution of Antitrust: Characterisation, Antitrust Injury and Evidentiary Sufficiency', (1989) 75 Va. L. Rev 1221.

[422] In economic terms, this means maximising consumer welfare by promoting allocative efficiency (making goods consumers want in the quantities valued by society), and productive efficiency (producing goods at the lowest possible costs) at the expense of dynamic efficiency (stimulating innovation and technological change). Consumer welfare is thus greatest when society's economic resources are allocated so that consumers are able to satisfy their wants as fully as technological constraints permit. See R H Bork, *The Antitrust Paradox: A Policy at War with Itself* , 2nd edn, (Basic Books: New York, 1993) at pp. 90-1. ("These two types of efficiency make up the overall efficiency that determines the level of our society's wealth, or consumer welfare. The whole task of antitrust can be summed up as the effort to improve allocative efficiency without impairing productive efficiency so greatly as to produce either no gain or a net loss in consumer welfare")

to consumer needs. Consumers would enjoy more choices, lower prices, and better products and services. The economy as a whole benefits from greater productivity gains and *more efficient resource allocation*."[423] Under this approach, the copyright owner must justify its refusal to license in terms of price and output efficiency, something that runs counter to the grain of the copyright system.

The growing prominence of IP markets brought a third goal of competition law to the forefront on the interface.[424] Part IV explores Joseph Schumpeter's theory that it may sometimes be necessary to forego static efficiency for greater gains in dynamic efficiency.[425] Schumpeter described the process of "creative destruction"[426] and the dynamics of innovation as the prime drivers of the competitive process. Technical progress makes market power an inherently temporary phenomenon, more than compensating for static welfare losses. Further, without proper regard for incentives, the result of competition will be insufficient innovation. It follows that since innovation is the engine that powers competition and ensures consumer welfare, the goal of competition law should be to encourage broad IP protection to foster and support firms' incentives to

[423] V Balakrishnan, *supra*, n.5. (emphasis added)
[424] For a discussion of the rise of IP markets, see Chapter I, Part III.
[425] Thus, static goals lead to a focus on short-run marginal cost, to the exclusion of long run efficient capital investments in R&D. J A Schumpeter, *Capitalism, Socialism and Democracy* (New York: Perennial,1943).
[426] Schumpeter describes "creative destruction" this way: "Economists are at long last emerging from the stage at which price competition was all they saw. As soon as quality competition and sales effort are admitted into the sacred precincts of theory, the price variable is ousted from its dominant position. However, it is still competition within a rigid pattern of invariant conditions, methods of production and forms of industrial organisation in particular, that practically monopolises attention. But in capitalist reality as distinguished from its textbook picture, it is not that kind of competition which counts but competition from the new commodity, the new technology, the new source of supply, the new type of organisation… competition which commands a decisive cost or quality advantage and which strikes not at the margins of the profit and outputs of existing firms but at their foundations and their very lives.". *Ibid*, at p.84.

innovate.[427] Supporting the Schumpeterian theory, the Minister noted that "in assessing whether an action is anti-competitive, we will also give due consideration to *whether it promotes innovation, productivity or longer-term economic efficiency*. This approach will ensure that we do not inadvertently constrain innovative and enterprising endeavours." [428] The Schumpeterian view is clearly the most permissive of market power copyright owners may wield, and allows temporary stifling of competition to promote greater welfare gains in the long-run.

The three goals may be mutually exclusive. [429] Structuralists may achieve low market concentration by penalising large firms enjoying scale efficiencies. Similarly, regulators concerned with static inefficiency may penalise conduct that raises prices above marginal costs. This will erode the supernormal profit firms enjoy. The loss of excess funds leads to a fall in investment needed for R&D and therefore dynamic efficiency. Conversely, promoting dynamic efficiency may mean promoting high concentration and large price-cost differentials which ire Harvard structuralists and Chicago School regulators. This mutual exclusivity makes it important for courts and regulators to be conscious of the goals driving it, since as Richard Bork pointed out: "everything else follows" from that.[430]

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[427] P Beutel, 'The Intersection of Antitrust and Intellectual Property Economics: A Schumpeterian View', in L Wu (Editor), *Economics of Antitrust: New Issues, Questions, and Insights*, (NERA Economic Consultants: New York, 2004) at p.131

[428] V Balakrishnan, *supra*, n.5. (emphasis added).

[429] D Geradin, 'Limiting the Scope of Article 82 of the EC Treaty: What can the EU learn from the US Supreme Court's Judgement in *Trinko* in the wake of *Microsoft*, *IMS* and *Deustche Telekom*?' (2005) Common Law Market Review: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=617263 at p.19. ("In the presence of non-perfectly competitive markets, tradeoffs may have to be made between these different forms of efficiencies.")

[430] R Bork, *supra*, n.1.

II. DIGITAL COPYRIGHT AND THE STRUCTURALIST APPROACH

The structuralist view was popular in early US cases, [431] and has more recently been adopted in the EU.[432] To the structuralist regulator, small is beautiful, and market concentration is bad. A large number of small firms approximate the ideal model of perfect competition. This ensures that competition between firms imposes market discipline to safeguard against 'abuse'.[433] Courts accepting this view assume that 'normal' competition occurs where no one has a dominant position. While the mere existence of a dominant undertaking is legal, it is inherently detrimental to a competitive market, and is under a 'special responsibility' not to commit acts that may further harm market competitiveness. Therefore, unobjectionable acts committed by a non-dominant undertaking would therefore be would therefore be illegal if committed by a dominant undertaking.[434] Competition policy must therefore not merely prevent SMEs from being driven out of the market; it must also buttress SMEs to compete with established powerful companies.

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[431] *United States v. Alcoa*, [1945] 148 F.2d 416 (2d Cir.) at 427. (Learned Hand J emphasized that monopoly power "deadens initiative, discourages thrift and depresses energy; ... the spur of constant stress is necessary to counteract an inevitable disposition to let well enough alone.")

[432] *Nederlandsche Banden-Industrie Michelin N.V. v. EC Commission* [1983] ECR 3461; *Hoffman-La Roche v. Commission,* [1979] ECR. 461.

[433] G J Stigler, 'The Origin of the Sherman Act', (1985) 14 J. Legal Stud. 1, 1-8.

[434] As the ECJ in *Hoffman La-Roche* put it: "The concept of abuse is an objective concept relating to the behaviour of an undertaking in a dominant position which is such as to influence the structure of a market *where, as a result of the very presence of the undertaking in question, the degree of competition is weakened* and which, through recourse to methods different from those which condition *normal competition* in products or services on the basis of the transactions of commercial operators, has the effect of hindering the maintenance of the degree of competition still existing in the market or the growth of that competition" (emphasis mine) *Hoffman-La Roche, supra*, n.17 at para. 91. See also J Faull and A Nikpay, *The EC Law of Competition*, (Oxford: Oxford University Press, 1999) at para. 1.01-4. ("In the EU, admittedly … competition policy is an economic policy concerned with economic structures."); B Sher, 'The Last of Steam-Powered Trains: Modernising Article 82', (2004) 5 ECLR 243-4. ("The Commission's current approach has its roots in a structuralist concept of competition which … should has been abandoned in favour of a welfare economics approach in Art. 81 and merger control…Thus, while the control of market power is the most obvious goal of Art. 82, there are a number of other potential goals, in particular: ensuring "fairness" in the market place by protecting small and medium enterprises from arbitrary behaviour…").

It has been observed that empirical studies by Harvard economists generally come to two conclusions.[435] First, innovation is more rapid in competitive markets than monopoly markets controlled by a well-ensconced content owner.[436] Second, despite arguments made about larger firms having more R&D potential, most of the innovation came from SMEs rather than large firms, [437] who have instead been observed to *suppress* innovation in order to protect their market share.[438]

They argue that large firms and the resulting high market concentration should not be necessary, since compared to traditional industries, digital copyright owners rely more on intellectual capital than physical capital. SMEs may attract venture capitalists willing to fund risky R&D protects, and can overcoming scale disadvantages that comes with their small size. Even where substantial capital

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[435] Under Harvard's structure-conduct-performance (SCP) framework of industrial analysis, market structure determines the firm behaviour which in turn determines market performance. The private exercise of concentrated market power is therefore both a poor source of market performance, and the main source of anticompetitive behaviour. B J Rodger, 'Competition Policy, Liberalism and Gloablisation: A European Perspective', (2000) Columbia Journal of European Law, Vol. 6 No. 3 303.

[436] M A Lemley and L Lessig, 'The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era', (2001) 48 UCLA L. Rev. 925,at p. 961 (Citing a study that demonstrates that "innovations were deployed faster in competitive markets than in monopoly markets"); M Green, 'Have the Antitrust Laws Promised Too Much and Accomplished Too Little? Answer Yes', (1977) 46 Antitrust L.J. 752, at p.755 ("The best studies of size and innovation demonstrate that moderate sized firms are the most innovative - not our largest firms who like to coast with a comfortable status quo."); D H Ginsburg, 'Antitrust, Uncertainty, and Technological Innovation', (1979) 24 Antitrust Bull. 635, at 649 ("Studies have indicated ... that small firms are more efficient than larger ones in conducting research.")

[437] F M Scherer, *Competition Policy: Domestic and International*, (USA: Edward Elgar Publishing, 2001) at p.1012 (Concluding that "relatively small firms and 'outsiders' appear to originate a disproportionate fraction of the most radical innovations"); E Mansfield, *Industrial Research and Technological Innovation: An Econometric Analysis*, (USA, W.W. Norton & Company, 1968) at p. 43 ("[E]xcept for the chemical industry, there is no evidence that the largest firms [in petroleum, drugs, steel, and glass] spent more on research and development... than did somewhat smaller firms."); W M Cohen and R C Levin, 'Empirical Studies of Innovation and Market Structure', in R Schmalensee and R D Willig (eds,) *2 Handbook of Industrial Organization*, at p. 1078 (Oxford: Elsevier Science Pub Co, 1989) ("[T]he effects of firm size and concentration on innovation, if they exist at all, do not appear to be important.").

[438] M E Porter, *The Competitive Advantage of Nations*, (Free Press: New York, 1998) at pp. 527-30, 577-89 (Showing that monopolists in mature markets have an incentive to suppress new technology so as to protect their sales revenue from existing products in markets they dominate.)

expenditure is needed, cross licensing facilitates innovation and experimentation necessary for innovation. In practice, this leads regulators to protect SMEs from elimination by dominant firms. Once market power is established, inquiries into conduct would merely be a formalistic gloss before finding 'abuse'. [439] This goal therefore results in the lowest threshold of 'abuse' amongst the three.

Against this pro-SME view, three objections may be raised. First, as Richard Posner argued, the idea that there is some special value to SMEs is "persistent but obscure". [440] The problem with the Harvard view in digital markets is that a single copyright owner may likely dominate as increasing returns to scale allow rivals to capture whole markets rather than simply market shares. More importantly, there is a reasonable expectation that the winner will achieve its dominance by refusing to license for the specific purpose of building its own network to achieve absolute monopoly with an aim of raising prices to recoup its investments in the long-run. Otherwise, the firm could be supplanted by some other firm that also had the intent of wiping out its competitors. Under Section 47(2)(a), this may be misconstrued as a 'predatory' abuse.[441]

Second, dominance is sometimes the most efficient way for a market to be structured. Indeed, dominance by the copyright owner may be inevitable in

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[439] H Hovenkamp, *Federal Antitrust Policy: The Law of Competition and Its Practice, 2nd edn, (*St. Paul: West Publishing Co., 1999)at pp. 47-76 (Arguing this view is supported by more recent amendments to the Sherman Act and public choice theory of the role of interest groups in the legislative process).

[440] R A Posner, *Antitrust Law*, 2nd edn, (University Of Chicago Press; Chicago, 2001) at p.25.

[441] As William Baumol and Januz Ordover aptly summed up: "Technological races that produce only one winner can lead to concentrated product markets. Such outcomes may be inevitable and if so, then should generally not be discouraged by antitrust policies." W J Baumol and J A Ordover, 'Antitrust: Source of Dynamic and Static Inefficiencies?' in *Antitrust, Innovation and Competitiveness* (Thomas M. Jorde and David Teece, eds.) (New York: Oxford University Press, 1992) at p.94.

network markets. Individual firms usually achieve market power in high technology markets because they have won the race to develop the most efficient network standard. Empirical studies show that a very small number of large companies generate most of the revenue in the sector - over half the total revenues in the US software and IT services market are generated by little over 10% of the companies in the market.[442] In these markets, one finds a pattern of progressive concentration, both at national and international level.[443] Information goods are increasingly created and exploited by ever-larger groups on a market with a shrinking number of significant competitors.[444] If dominance is inevitable, then the focus should be that the market anointed the wrong dominant undertaking, rather than penalising dominance *per se*.[445] It would be unfair and inefficient to punish an owner that has done what society wants and thus achieved the goal that society sets before it.[446]

The better approach would be to recognise that all market economies require elimination of rivalry as corollary to specialisation of effort. Even in markets capable of supporting several firms, the hope of monopoly power is an incentive to be efficient and innovative. Supernormal profits help enforce the limit

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[442] J Lerner, 'The Returns to Investment in Innovative Activities: An Overview and an Analysis of the Software Industry', in D S Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*, (Boston: Kluwer Academic Publishers, 2002) at p. 471.
[443] *Ibid*.
[444] F Silva and G B Ramello, 'Sound Recording Market: the Ambiguous Case of Copyright and Piracy', (2000) 9 Industrial and Corporate Change at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=245314., 415-442.
[445] D J Teece and M Coleman, 'The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries', (1998) 43 Antitrust Bull. 801 at 812. (Noting that studies relating measures of industry performance to concentration and barriers to entry across industries suffer from several conceptual problems. A statistically significant relationship between concentration and performance would not necessarily imply that concentration caused price to be above the competitive level. Firms become large, increasing concentration, because they are efficient.)
[446] *United States v. Aluminium Co. of Am.* [1945] 148 F. 2d 416 (2d Cir), at 430. ("The successful competitor, having been urged to compete, must not be turned upon when he wins.")See also Chapter I Part IV.

on monopoly power by encouraging others to capture the market through their own innovation and skill. The consumer is not interested in the abstract that there exists several equally competing undertakings in the marketplace, but rather that he can find the highest quality widgets at the lowest price. As will be seen, market power often persists because digital goods produced by dominant undertakings are superior in quality, cheaper or more readily interoperable compared to its rivals.[447] This makes the inherent suspicion of single firm markets to be suspect itself.

Third, empirical evidence relating size to innovation is at best, equivocal. Studies challenge structuralist conclusions, and posit that incumbent firms have greater incentive to engage in R&D, as they have more to lose from letting competition in than a potential entrant has from challenging the monopolist. [448] In fact, the weight of empirical evidence suggests that market structure, whether populated by SMEs or otherwise, has little impact on innovation.[449] Measures of market performance may fail to measure economic profits or costs accurately, especially where long-lived capital assets such as those characteristic of digital markets are present. The measurement of barriers to entry is often subjective and

[447] Chapter III, Part IV.
[448] R J Gilbert and D M G Newberry, 'Preemptive Patenting and the Persistence of Monopoly Power', (1982) 72 American Economic Review 514. ("The monopoly stands to lose more … than the rival (incumbent). The rival loses only its R&D expenditures, whereas the monopoly loses its R&D expenditures and some of its monopoly profits. The monopoly's primary aim is not to lose. The monopoly can use the new invention to maintain its monopoly, whereas the rival can only use it to become a duopolist. Thus the monopoly has the incentive to innovate more than the potential rival up to a difference between monopoly and duopoly profits. … where a monopoly has to worry about a potential rival entering its market by inventing has an incentive to innovate to prevent entry. This competitive threat gives the monopoly a greater incentive to invent than a competitive firm.")
[449] W M Cohen and R C Levin, *supra*, n.22.

typically fails to distinguish between long-run barriers to entry and the speed with which entry can occur.[450]

On an intuitive level, Harvard School reasoning is appealing because perceptible rivalry does seem to equate effective competition. [451] The appeal, however, does not withstand closer scrutiny. [452] Harvard regulators provide no benchmarks for how much rivalry is needed for competition to be 'effective', and invites the erroneous conclusion that the elimination of rivalry must always be deemed to be anticompetitive.[453] More fundamentally, it makes rivalry an end in itself, regardless of whether the elimination of some rivalry had any negative impact on consumer welfare. By severely restricting the use of market power conferred by digital copyright so narrowly, it may end up equating dominance itself as 'abuse'.

Indeed, the best competition policy for SMEs may be no competition policy. Interfering with the conduct of dominant firms to enable SMEs to survive even if their costs are higher than those of larger firms passes on the costs of inefficiency and need for continued supervision of dominant firms to taxpayers.[454]

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[450] D W Carlton and J M Perloff, *Modern Industrial Organisation*, 4th ed., (Pearson: Boston, 2005)at p.281.

[451] *In the Case of Monopolies*, [1603] 77 Eng. Rep. 1260 (K.B.), which involved the monopolization of the playing card market, Lord Coke concluded that the vices of monopoly were that the price of the same commodity will be raised, for he who has the sole selling of any commodity, may and will make the price as he pleases.... [And] the [quality of the] commodity is not so good and merchantable as it was before: for [he who has] the sole trade, regards only his private benefit, and not the common wealth. *Ibid*,. at 1263.

[452] G Tritton, *Intellectual Property in Europe,* (Sweet & Maxwell: London, 2000), at p. 829. (Arguing that the structuralist view should not guide competition policy.)

[453] *Ibid*, at p. 804. ("The difficulty about such an approach is that it often undermines certainty in cases concerning the application of the law. This has been highlighted in a number of cases concerning the application of Community law to intellectual property")

[454] R A Posner, *Antitrust Law: An Economic Perspective* (Chicago: University of Chicago Press, 2001) at p.26. (Arguing that in relation in the context of price cartels that antitrust enforcement is

SMEs are usually helped rather than hurt by dominant firms, so unless competition law is stood completely on its head, it is inapt for assisting small businesses.[455] It is therefore submitted competition law should be about protecting consumer interests rather than rivalry as an ends in itself. The goal is therefore one of market 'contestability', and is breached only when conduct is calculated to exclude an equally or more efficient firm. This view of 'contestable markets' was duly endorsed during the Parliamentary debates.[456] The ECJ in *Oscar Bronner* too, had little trouble articulating its commitment to protecting competition and not competitors.[457]

The difficulty, however, lies not in recognising that market structure should not be the focus, but in resisting the temptation of a quick fix through it. This is evinced clearly from *Microsoft(EU)*. The Commission therefore relied on a structuralist argument that technical development in the IT industry was best promoted by a number of different firms innovating rather than one.[458] Singapore

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"not only an ineffectual, but perverse, instrument for trying to promote the interests of small businesses as a whole.")

[455] *Ibid*, at p. 2.

[456] S Iswaran, *supra*, n.5 (**"**Competitiveness does not equate with competition**.** The key element here is in facilitating a competitive economy, the critical ingredient is what some have called "*contestability*". In other words, whether there is one, a few or many players in a given market, it is the potential and actual competition**.** In other words, the competition from the existing players in the market and also the potential for new entrants to come in and lead really ensure a competitive framework. And it is important that, in that regard when we look at any market-related issues and competition, this be borne in mind. Ultimately, the objective is fair competition and it is not to protect individual players or competitors in the market.") (emphasis added)

[457] As *Oscar Bronner* noted, there is no duty to protect rivals. *Oscar Bronner GmbH & Co. KG v Mediaprint Zeitungs* [1998] ECR I-07791 ("it is important not to lose sight of the fact that the primary purpose of Article 86 is to prevent distortion of competition - and in particular to safeguard the interests of consumers - rather than to protect the position of particular competitors.") at para. 58.

[458] *Microsoft* Comp C-3/37.792 of 24 March 2004 at para. 694 (Holding that lack of access to interoperability data unjustifiably restrcits the inability of Microsoft's rivals to develop new products. It concluded that *on balance* the possible negative impact of the order to supply on Microsoft's incentives to innovate is outweighed by its positive impact on the level of innovation of the whole industry.)

would be complacent if it thinks this temptation can be easily avoided. Indonesia enacted a similar law in 1999. [459] Yet, a commentator noted:

> "Although the Commission only began its work in 2001, it is more concerned with (arguably misguided) equity considerations - specifically, *protecting small business rather than protecting the competitive process*. If this is the case, the law will not be able to achieve the objective of promoting free and open competition. Moreover, protecting small firms from the need to compete will actually have the perverse effect of holding back their development."[460]

Courts have little competence to determine the structure of markets or the precise economic effects of agreements among competitors.[461] Competition law should instead draw upon a conduct-based approach to draw upon the judicial strengths. Judges are adept at determining the purpose and motivation for defendants' conduct.[462] It is a task they face every day in resolving legal disputes by concentrating on conduct, courts can distinguish more effectively between the competitive abuses that should be deterred and the innovative conduct that should be encouraged in high technology markets.[463]

In light of the foregoing, the Minister's exhortations for a "level playing field" are better understood as being directed toward regulating Government Linked Companies (GLCs), rather than dominant undertakings generally. [464] This is consistent with responses by fellow Parliamentarians, welcoming the application of competition law on GLCs so that private firms may "compete

[459] Law Banning Monopolistic Practices and Unhealthy Business Competition (Indonesia)
[460] Thee K W, 'Competition Policy in Indonesia and the New Anti-Monopoly and Fair Competition Law', Bulletin of Indonesian Economic Studies (2002) Vol 38, No. 3 at 340.
[461] See Chapter IV, Part IV for a discussion on this.
[462] L A Sullivan, 'Economic and More Humanistic Disciplines: What are the Sources of Wisdom for Antitrust?', (1977) 125 U. Pa. L. Rev. 1214, at 1224.
[463] T A Piraino, Jr., 'A Proposed Antitrust Approach to High Technology Competition' (2002) William and Mary Law Review 67
[464] V Balakrisnan, *supra*, n.3.

fairly".[465] It is also consistent with the tenor of the competition Chapter of the US-Singapore FTA, singling out GLCs and detailing how they should be regulated under the Competition Act.[466] In contrast, the broad mandate of the Competition Act was to "adopt or maintain measures to proscribe anticompetitive business conduct with the objective of *promoting economic efficiency and consumer welfare*".[467]

III. DIGITAL COPYRIGHT AND CONSUMER WELFARE: STATIC EFFICIENCY

Unlike Harvard School regulators, Chicago School regulators are not concerned with monopolies, since the market mechanism prevents absolute control over price and quantity.[468] Instead, they prefer immediate results in price and output to promises of improved welfare through policies directed toward dynamic efficiency. [469] Despite the trend US cases have taken toward favouring dynamic efficiency,[470] some EU cases have chosen to fixate themselves on static

[465] I Singh ("We needed to create a level-playing field so that no one company has an undue advantage, particularly the *Government-owned companies*") (emphasis added)
[466] See in particular Article 12.3 outlining monopolies covered under Singapore's obligations. The Article contains extensive provisions detailing obligations Singapore is under to prevent its GLCs from leveraging on its government links to compete unfairly. For a view supporting this, see Minn N O, 'Competition Policy', in T Koh and Chang L L, *The United States Singapore Free Trade Agreement: Highlights and Insights* (Singapore: Institute of Policy Studies and World Scientific Publishing, 2004) at p.119.
[467] *Ibid*, Article 12.1. (Emphasis mine.)
[468] M W Reader 'Chicago Economics: Permanence and Change' (1982) 20 1 Journal of Economic Literature 15, (Arguing that "When alleged monopolies are genuine, they are usually transitory, with freedom of entry working to eliminate their influence on prices and quantities within a fairly short time period.")
[469] Views identified with this school include: H L Millar, 'On the Chicago School of Economics' (1962) Journal of Political Economy 70, G J Stigler, 'The Goals of Economic Policy', (1975), 18(2) Journal of Law and Economics 283 and R A Posner, (1980) 'A Theory of Primitive Society, with Special Reference to Law' (1979) 23(1) Journal of Law & Economics 1.
[470] E Elhauge, 'Defining Better Monopolisation Standards' (2003) 56 Stanford Law Review 253 at 275, fn 66.

gains.[471] In order for courts and regulators in Singapore to select appropriately, it is important to understand the rationale of these EU courts for doing so.

The first explanation, as Damien Geradin suggests, may be that static efficiency is both easier to measure and gives immediate results.[472] Static efficiency gains from condemning refusals with leveraging effects or mandating access to an essential facility are generally more easily perceived than dynamic gains from refraining to intervene in hope that gains from technological progress outweigh static losses. Increased competitors, lower prices and higher quantity of products and services present themselves as attractive short-term benefits of intervention. As Geradin notes, competition authorities have a vested interest in producing results perceivable to the public. There is therefore a temptation to opt for static goals.

A second explanation may be that digital copyright owners have appropriated their dues from the first sale of their work. Regulators therefore reason that they should not be able to exercise continued control over its use. It is irrelevant whether this results in competition for products in downstream markets or whether the rival's product is in direct competition with the original. This translates into lower thresholds for finding 'abuse' or leveraging or denying access to 'essential facilities'.

[471] D Geradin, *supra*, n. 14 at p.19. (Noting that "the Commission and the European Court of Justice have traditionally focused on the increased 'allocative efficiency' which would be gained by stimulating competition between the access 'giver' and the access seeker(s) in downstream markets.")
[472] *Ibid*.

A. *Static Efficiency: A Safer Bet?*

Chicago regulators generally believe that competition law and copyright law can harmoniously co-exist.[473] However, where market discipline fails, competition law needs to intervene to protect consumer welfare by encouraging the efficient allocation of society's resources and ensuring firms produce at the lowest efficient costs. Left to themselves, copyright owners will not efficiently license would-be improvers. Parties may not be able to agree on licensing terms, particularly where the potential licensee intends to use licensed content to compete with the owner. This is particularly so in digital markets where radical innovation commonly threatens to render the copyrighted work technologically obsolete.[474] Further, there is no empirical evidence that when the copyright owner appropriates gains at the expense of static efficiency, these gains actually contribute to further innovation.[475] As Josef Drexl asserts:

> "(A)n obligation to deal under competition law would make economic sense to promote allocative efficiency… the innovation argument should not help the dominant undertaking since there is not the slightest

[473] W J Bowman Jr., *Patent and Antitrust law: A Legal and Economic Appraisal* (University of Chicago Press: Chicago, 1973). ("The goal of antitrust law and patent law is to maximise allocative efficiency and productive efficiency. In achieving this goal under either antitrust or patent law the detriment to be avoided is output restriction… an appraisal of alleged conflicts between antitrust law and patent law depends upon understanding the role of profits in providing the incentive for undertaking efficient production of those things consumers value")

[474] R S Eisenberg, 'Patents and the Progress of Science: Exclusive Rights and Experimental Use', (1989) 56 U. Chi. L. Rev. 1017, at 1072-73.

[475] F M Scherer, *supra,* n.22 at 1016-17 (Concluding that compulsory licensing decree imposed on Xerox did not stall its research and development, but instead facilitated innovation by enabling others to improve the technology developed by Xerox); *Ibid*. at 1018 ("[A] massive antitrust attack on business firms' use of patents to monopolize markets or enhance profit returns appears to have had negligible adverse consequences for the vigor of innovative activity in the United States.").W M Cohen and D A Levinthal, 'Innovation and Learning: The Two Faces of R&D, (1989) 99 Econ. J. 569; Z Griliches, 'The Search for R&D Spillovers', (1992) 94 Scand. J. Econ. 29; R C Levin, 'Appropriability, R&D Spending, and Technological Performance', (1988) 78 Am. Econ. Rev. 424, at 427.

economic guarantee that excessive revenues for the dominant firm would be reinvested in innovation."[476]

Digital copyright owners are thought to have a particular incentive to extend their monopoly power through such practices.[477] Low marginal costs mean most of the incremental revenues go directly to the 'bottom line'. Profits earned by extending its monopoly often exceed the costs of the exclusionary practices required to achieve the extension. [478] By limiting the leveraging effects of refusals to license, free competition allocates resources efficiently according to consumer preferences and forces firms to compete closer to cost. A competitive market environment is created for rivals to succeed through innovation and the relative merits of products and services. Further, the lure of potential supernormal profits attracts further discoveries and improvements that might be suppressed or deflected by these leveraging effects.[479]

This view is problematic for two reasons. First, it presumes that foregoing static efficiency necessarily foregoes the market discipline to promote innovation. The fact is that dynamic efficiency reconciles the apparent conflict between exclusive control by copyright and free competition. Just as ownership of goods restricts competition at the level of consumption in favour of competition at the level of production, copyright restricts competition at the level of production in

[476] J Drexl, 'IMS Health and Trinko- Antitrust Placebo for Consumers Instead of Sound Economics in Refusal-to-Deal Cases' (2004) IIC Vol. 35 788 at 805 (arguing that the essential facilities doctrine should be applied to duplicate services in both *Trinko* and *IMS Health*.)
[477] R A Posner, *supra*, n. 39 at p. 935 (Calling the period during which a high technology monopoly is extended by exclusionary practices 'the extension period').
[478] C T Taylor and ZA Silbertson, *The Economic Impact of the Patent System: A Study of the British Experience* (Cambridge University Press: Cambridge, 1973) (In the UK electronics industry, dependency on patent protection was found to be negligible.)
[479] L A Sullivan and A I Jones, 'Monopoly Conduct, Especially Leveraging Power' in D Teece and T Jorde eds., *Antitrust, Innovation and Competitiveness* (Oxford: Oxford university Press, 1992) at p175.

favour of competition at the level of innovation. The ability to exercise property rights at one level ensures that the market and competition develop at the next higher level. Thus seen, copyright restricts competition at one level for the benefit of competition at another.[480] Only by modifying the static framework to account for these differences will the competitiveness of copyright markets be accurately measured. [481]

Indeed, the gains from dynamic efficiency may well outweigh any present losses in static efficiency. [482] As Frank Easterbrook noted, "an antitrust policy that reduces prices by 5% today at the cost of reducing 1% the annual rate which innovation lowers the cost of production would be a calamity. In the long run a continuous rate of change, compounded, swamps static losses".[483] Some theorists, such as Arnold Harberger argued that inefficiency resulting from monopoly is much smaller than what had been thought.[484] For this reason, US antitrust law has increasingly incorporated the value of innovation and technological progress into its calculus of "economic efficiency" and consumer welfare.[485] It is submitted that this is the right approach for Singapore to take. Where the promotion of static

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[480] T F Cotter, 'Intellectual Property and the Essential Facilities Doctrine', (1999) 44 Antitrust Bull. 211, 227-28. ("Whereas competition law seeks to achieve economic efficiency by promoting competition over monopoly, intellectual property law can be viewed as an effort to achieve this goal by stifling competition, at least in the short term.")

[481] Thus, the antitrust authorities do not approach IP markets as an 'exception' under antitrust law; rather the authorities revise the economic lens through which IP markets are scrutinized in order to account for their differences from other markets. Hovenkamp *et al*, *IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property* (New York: Aspen Law, 2003), at p. 4.1c.

[482] O Granstrand, *Economics of Technology* (North-Holland: Amsterdam, 1994)

[483] F H Easterbrook, 'Ignorance and Antitrust', in T M Jorde and D Teece, (eds.), *Antitrust, Innovation and Competitiveness* (New York: Oxford University Press, 1992) at pp. 122-3.

[484] A Harberger, 'Monopoly and Resource Allocation', (1954) 44 2 The American Economic Review, Papers and Proceedings of the Sixty-sixth Annual Meeting of the American Economic Association, at pp. 77-87.

[485] R J Gilbert and W Tom, 'Is Innovation King at the Antitrust Agencies? The Intellectual Property Guidelines Five Years Later', (2001) 69 Antitrust L.J. 43 at p.44 (Finding that innovation's "role has become increasingly important and has been decisive in several merger and non-merger enforcement actions that have potentially very significant impacts for consumer welfare").

consumer welfare and innovation are in conflict, courts should favour future gains. This may make analysis less tractable, but at least it will focus on the correct issues.[486]

Second, even if market discipline fails in the static sense, technical progress and entry make market distortions from copyright a necessary but an inherently temporary phenomenon.[487] It is necessary because the monopoly provides both the market inertia required for complementary applications to be written for the platform, as well as the profits required to attract investment and development of the network by the copyright owner. It is temporary because the rapid pace of technological change will act as a natural counterweight to a firm's monopoly power, even without antitrust intervention. [488] The bursting of the NASDAQ high technology stock 'bubble' in 2001-2 has been cited as an example of the "boom-and-bust" cycle typical of digital markets.[489] These observers believe that high technology markets confer only brief 'serial monopolies' on

[486] W J Baumol and J A Ordover, in W J Baumol and J A Ordover *supra*, n. 26 ("antitrust policies seem too much preoccupied with static market power and competition at the expense of dynamic considerations.")

[487] R R Nelson and S G Winter, 'The Schumpeterian Tradeoff Revisited', (1982) 72 Am. Econ. Rev. 114 (Defining Schumpeterian hypothesis as positing that "[a] market structure involving large firms with a considerable degree of market power is the price that society must pay for rapid technological advance"); F M Scherer, 'Antitrust, Efficiency, and Progress', (1987) 62 N.Y.U. L. Rev. 998, at p.1010 (noting that Schumpeter's hypothesis encompasses the points that (1) only large businesses can achieve sufficient scale to invest in research and development and bear the necessary risks, (2) the profits yielded by monopoly are an ideal fund to support research and development, and (3) a monopoly position is necessary to ensure that a business can appropriate the benefits of research and development expenditures).

[488] J Schwartz, 'The Land of Monopolies', N.Y. Times, 1 July, 2001, § 4 (Week in Review) ("Some commentators ... point to the fact that the technology market is so volatile that today's monopolist is tomorrow's loser-lessons learned by the makers of such products as Lotus 1-2-3 and Wordstar, which once dominated their worlds.").

[489] D Wessel, 'Steering the Economy Gets Harder', Wall St. J., 18 July 2002, at A1 ("Rapid changes in technology can produce more booms and busts. Technological change increases uncertainty about the future, and with more uncertainty comes NASDAQ-like bubbles and busts. The promise of technology creates tidal waves of euphoria that are followed by tidal waves of despondency when profits prove disappointing.").

firms which disappear when nimbler rivals appear.[490] At the initial stage of a product cycle, the commercialisation of a new product generates high returns. Market leaders may price their products at a level that yields the highest short-run profit but encourages new entry on a long-term basis.[491] Returns then decline precipitously as firms cut prices to the level of their costs.[492] Schumpeter called this process, in which market power rises and falls, "creative destruction",[493] and digital markets are rife with examples of it.[494]

It is not suggested that because dynamic efficiencies and copyright ensure an innovative and self-regulating economy, dynamic efficiency considerations are paramount or all consuming. Neither does this mean that competition law should stay away from regulation of monopolies Static and dynamic efficiencies are both important goals for healthy market economies. However, in the realm of intellectual property rights, more attention should be given to recognising and

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[490] T J Muris, 'Antitrust Enforcement at the Federal Trade Commission: In a Word-Continuity', Remarks at the ABA Antitrust Section Annual Meeting (Aug. 7, 2001), at http:// www.ftc.gov/speeches/muris/murisaba.htm ("The fierce competition for success in these [high technology] industries often results in the winner enjoying a (perhaps short-lived) monopoly.").

[491] L A Sullivan, 'Economic and More Humanistic Disciplines: What are the Sources of Wisdom for Antitrust?', (1977) 125 U. Pa. L. Rev. 1214 at p.1225 (Describing the price that yields "the highest short run monopoly profit, but also does the most to attract entry")

[492] D J Teece and M Coleman, *supra*, n.30 at p.824 (Describing the high technology business cycle).

[493] J A Schumpeter, *Capitalism, Socialism and Democracy* (New York: Perennial,1943) at p. 83. In the 1980s and 1990s IBM lost much of its dominance in computers due to advances in microchip technology that allowed personal computers to do the work of mainframes at a fraction of the cost. See D L Rubinfeld, 'Antitrust Enforcement in Dynamic Network Industries', (1998) 43 Antitrust Bull. 859, at p. 875. Some commentators argue that even the dominance of Microsoft's Windows operating system is now being eroded by the growth of the Internet. G S Becker and K M Murphy, 'Rethinking Antitrust', Wall St. J., 26 February 2001, at A22.

[494] Henderson and Clark studied five generations in the semiconductor photolithographic alignment equipment industry, and they concluded that no firm that led in one generation figured prominently in the next R M Henderson and K B Clark, 'Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms', (1990) 35 Admin. Sci. Q. 9; see also D J Teece and M Coleman, *supra*, n.30, at p.805 (Discussing Henderson and Clark's study). Xerox's control over the copier market, for example, evaporated in the 1970s. See K Dooley, 'The Paradigms of Quality: Evolution and Revolution in the History of the Discipline', at http://www.eas.asu/kdooley/papers/qualityparadigm.pdf (referring to the decline in Xerox's share of the U.S. copier market from ninety-six to forty-six percent in the 1970s).

quantifying the gains that come from dynamic efficiency. This will aid stakeholders in making a little less esoteric, and thereby a little less difficult, this balancing process that inevitably arises from any dispute at the Interface.

B. *The Dues of Copyright*

Advocates of static efficiency offer a second reason for disfavouring dynamic efficiency - the first-sale doctrine.[495] The first-sale doctrine is generic to patent, copyright and trademarks.[496] In the digital copyright context, the copyright owner may have successfully competed and established itself as the industry standard, as Microsoft did, and has already been rewarded through being the 'first mover', benefiting from network effects, reputation and its conquered pool of users. [497] Even if access is granted, owners should already have been able to recoup their investments because of their first-mover advantage. [498] In fact, to allow the owner to continue to appropriate rewards, even if the rival does not

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[495] While the Singapore Copyright Act does not expressly provide for the first-sale doctrine, a reading of Section 33 and 25 gives the same result. Section 33 provides, *inter alia*, that selling imported goods without the owner's consent would infringe its copyright. Section 25 provides that who the "copyright owner" is depends on the context. This suggests that a person who has bought the goods legitimately from the owner for re-sale cannot be deemed to have contravened Section 33, since Section 25 states that the buyer is entitled to the copyright for that purpose. See G Wei, *The Law of Copyright in Singapore*, (SNP Editions: Singapore, 2000) at pp.634-55, giving a comprehensive history of the development of the first-sale doctrine.

[496] W R Cornish and D Llewellyn, *Intellectual Property: Patents, Copyright, Trademarks and Allied Rights* (London: Sweet & Maxwell, 5th Edition, 2003) at pp.739-70.

[497] This sufficiency of the first mover advantage to innovate is stressed by S G Breyer J: "Even if subsequent users of the information can obtain it free *post* generation, there may still be adequate incentive to provide it without IPR protection. Much depends on the extent of lead that its production will give him over his competitors. The advantage is particularly strong when the IPR protects time sensitive information." in S Ricketson, *Intellectual Property- Cases, Materials and Commentary*, (Australia: Butterworth's, 2005) at p.73.

[498] As Boudin J. in *Lotus v. Borland* explained: "But if a better spreadsheet comes along, it is hard to see why customers who have learned the Lotus menu and devised macros for it should remain captives of Lotus because of an investment in learning made by the users and not by Lotus. Lotus has already reaped a substantial reward for being first; assuming that the Borland program is now better, good reasons exist for freeing it to attract old Lotus customers: to enable the old customers to take advantage of a new advance, and to reward Borland in turn for making a better product." *Lotus Development Corp v. Borland International Inc*, [1995] 49 F.3d 807 (1st Cir.) at 821

attempt to offer a new product, would amount to overcompensation.[499] This is particularly so if the copyright owner leveraged its power between markets.

The inference is that competition is being restricted in the second market and the owner by increasing its profits through exploiting consumers and distorting static efficiency to a degree that cannot be justified by innovation. Therefore, any rewards on grounds of copyright exercise should be carefully circumscribed.[500] Thus, if Microsoft's rivals or customers find it difficult to compete because of lack of access to its APIs, they should be entitled to allege that refusing to license those APIs amount to an abuse of dominance. This was precisely what happened in both *Microsoft* cases.[501]

Competition law accords little sympathy to the copyright owner pleading that its proprietary information should not be shared because of interests in subsequent commercial exploitation. In the *Dior v. Evora*, the ECJ held that once a trademark owner had placed its good on the market, it had no right to further commercialisation.[502] In response to *IMS Health*'s sanction of the owner's refusal, it was argued that once the standard had been marketed to the pharmaceutical

[499] J Drexl, *supra*, n. 61 at 802 (Arguing that competition by imitation is acceptable if competition by substitution is not, in order to protect consumer welfare. However, while copyright has traditionally allowed access to ideas to produce original substitutes, it has never allowed access to produce pirated imitations. Thus makes Drexl's suggestion untenable in the face of sound copyright policy.)
[500] M E Porter, *The Competitive Advantage of Nations*, (Free Press: New York, 1998) at p.788 (Explaining how first mover advantages can bring considerable rents to a firm, even where competitors soon enter a market).
[501] *EC Commission v. Microsoft* [2004] Case T-201/04; *United States v. Microsoft* [2000] 253 F.3d 34, 346 U.S.App.D.C. 330
[502] *Parfums Christian Dior SA v. Evora BV*, C-337 [1997] ECR I-6013. While this is

industry, a rival should be allowed to reproduce its standard, even if it does not itself offer a new product.[503]

Digital networks give rise to an additional buttress for the first-sale doctrine to apply. The Commission in *IMS Health* argued the owner should no longer be able to control access, since its success in establishing the copyrighted standard was really due to consumer participation.[504] These consumers may have become dependent in some way on the copyright owner because they have become conditioned to accept only products that comply with those features or characteristics that are protected by copyright. In these circumstances, some sort of 'market necessity' argument could be used to support the view that copyright law ought to recognise that the competitors in the market occupied by the copyright owner have some sort of entitlement to use that industry standard.[505] If rivals could provide better products, consumers should be able to move freely between products, and not be 'locked–in' simply because they were more familiar with the incumbent's product.[506]

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[503] A Kur, "The Presentation Right- Time to create a new limitation in copyright law?' (2000) 3 IIC 308, at 314-8 (suggesting the limitation be 'internalised' into copyright law.)

[504] B Ong, 'Anti Competitive Refusals to Grant Copyright Licences: Reflections on the IMS Saga' (2004) 26 EIPR. 26(11) 505 at 507. ("What drew the attention of the competition authorities to the IMS case was the fact that the copyrighted subject-matter was something which had been developed in collaboration with IMS's customers, to the point where it had become a de facto industry standard which all customers in the market insisted having incorporated into the products they purchased.")

[505] *Ibid*, at pp. 505-514, noting however that the Commission erred, in deciding that compulsory licensing is appropriate simply because IMS developed the 1860 brick structure with significant input from end users. ("It is precisely the value of intellectual property to the ultimate user that renders it worthy of protection, and creators routinely gather information through market research or other methods in order to devise the most effective product possible. For example, beta testing of computer software is a common practice. Indeed, the very purpose of the intellectual property system is to stimulate innovation that will satisfy the demands of the market.")

[506] See Chapter III, Part IV for a discussion of 'lock ins'.

The main problem with this view is that it misunderstands the first-sale doctrine. The doctrine represents an endogenous balance between the owner's rights and the public's rights under copyright law. While the owner should not be able to control the resale and distribution of its work, it nonetheless retains control over, *inter alia*, its adaptation, translation, performance, and reproduction. This suggests that copyright law recognises the owner's right over the *access* to its work required for such acts. An attempt to use what is in effect a limited exhaustion of the copyright owner's rights as a reason for mandatory access under competition law once the first sale is made overlooks the crucial distinction between the physical copy of the work, and the copyright residing within. Only the *right to distribute* the physical copy may be exhausted. The *copyright* cannot. Access to copyrighted content undermines the owner's right to control derivate uses as well as its ability to charge for every non-infringing use of their work, as is their prerogative under copyright law.

Indeed, the fact that the focus is on digital content can only strengthen the copyright owner's case against this 'backdoor approach' to mandating access through the first-sale doctrine. Digital goods make it easier for free-riders to misappropriate the owner's rent. Copyright owners need continued monopoly profits beyond its first mover advantage to be sufficiently profitable to sustain investment in the company and recover its fixed costs. [507] These costs are higher than merely the costs reflected on the accounts for the product for which access may be mandated under competition law. The figure is significantly higher due to

[507] R A Posner, *supra*, n.25 at p.250. ("It is not a violation of antirust law to charge a monopoly price to maximise profits.")

the need to reflect 'commercial risks'.[508] Recognition for internalising risk was given by an enlightened CFI judgment in *European Night Services v. Commission*, where it held that "when Community law intervenes to require access, full compensation should be obtainable, not only for the capital invested but also for a normal return having regard to the risk of the investment."[509] Further, all digital standards require the participation of consumers. On this view, an opposite, but equally perverse result would occur: that the owner would *never* be able to refuse access, since the standard does not belong to it, regardless of the investment and IPRs legitimately granted precisely to block such attempts to access.

Ultimately, any competition policy advocating a static focus in digital markets is unrealistic because it assumes that the consumer benefits of technological change are illusory. Dynamic efficiency confers social benefits far in excess of the social costs of the short-lived monopoly prices that the process also gives rise to, particularly in software, where quality competition tends to dominate price competition.[510] As Robert Lind and Paul Muysert warned: "It is generally agreed that IP laws should not be systematically eroded by competition authorities on an *ad hoc* basis in their pursuit of short term competition objectives of power prices and profits".[511] This does not mean that the static focus is irrelevant. It may continue to be relevant in traditional agricultural or industrial settings where resource limits change slowly. In digital markets, resource limits rapidly recede due to technological changes. For example, silicon in sand, one of

[508] R Gilbert and W Tom, *supra*, n. 70 at 45-46.
[509] T-374, 375, 384 & 388/94, [1998] E.C.R. II-3141, [1998] 5 C.M.L.R. 718.
[510] R A Posner, *supra*, n.25, at p.250. (Noting that the quality adjusted price of software has fallen simply because quality improvements have vastly outrun price increases.)
[511] R C Lind and P Muysert, 'The European Commission's Draft Technology Transfer Block Exemption Regulation and Guidelines: A Significant Departure form Accepted Competition Policy Principles', (2004) 4 ECLR 181 at p.183.

the earth's most common substances has through a series of innovations, provided us with information-processing capabilities inconceivable only a few decades before. Similarly, the previously unexploited electromagnetic frequency spectrum provides land mobile, broadcasting, and satellite communications catering to human needs in a way inconceivable during the late 19th century. These examples suggest that focusing on current limits as static efficiency does is normally misleading.[512]

Further, there is a need to take into account the variability of human needs and the allocation of current resources for the future generation and transformation of resources under uncertainty. [513] This is something that only a dynamic focus can provide. While this goal is arguably the right one for courts and regulators in Singapore to take when dealing with digital copyright markets, it is submitted that this does not end the discussion. Rather, the correct focus is only the first step in the analysis. It is increasingly clear that digital products whose primary value lies in copyright are fundamentally different from staples of the industrial economy or service economy products.[514] Competition laws were designed to regulate competition in traditional industrial markets, where the effects of technological changes are relatively measured and predictable. In digital markets, this inquiry takes place within the matrix of network effects, where the law has struggled to decide the threshold where Schumpeterian efficiency must

[512] S Schiesel, 'Bringing Competition into the Age of the Internet', New York Times, 25 December, 2000, at C1 ("Many of the analytical and intellectual tools that competition authorities use these days were developed for slow-changing industries like manufacturing. But these methods may not be up to the task of dealing equitably with technology sectors where the competitive landscape can change significantly from year to year.").
[513] O Granstrand, *supra*, n. 66.
[514] *United States v. Microsoft Corp*., [2001] 253 F.3d 34 (D.C. Cir.) at para. 49.("We decide this case against a backdrop of significant debate amongst academics and practitioners over the extent to which 'old economy' ... [antitrust] doctrines should apply to firms competing in dynamic technological markets ....")

give way to the immediate, visible goals proposed by the Harvard and Chicago schools. [515] For decades, US antitrust law has approached the Interface with a dynamic focus to competition. Yet, it is still some way to developing a framework that marries this focus with legal rules to juxtapose usefully upon a given set of facts. Richard Posner has suggested the reason for why competition rules in digital markets has proven more difficult to craft than other complex technical areas which the law regulates: digital markets are characterised by network effects which do not operate on the same plane of certainty as engineering, biotechnological or commercial concepts do.[516] If Singapore is to hold its place in the global economy, it must do better.

IV. DIGITAL COPYRIGHT AND CONSUMER WELFARE: DYNAMIC EFFICIENCY

Having adopted a dynamic focus to regulating digital copyright, competition law becomes concerned with the extent to that copyright owners become entrenched and use their copyright to block entry to those able to provide new or better products. This is the idea of 'contestable markets'. In this regard, the view competition policy takes of network effects is crucial in determining where thresholds of 'dominance' and 'abuse' lie.

A critical issue in the *Microsoft* cases was whether Microsoft been able to perpetuate its market power by taking advantage of its "applications barrier to

[515] D. I. Bainbridge, *Intellectual Property*, (5th edn.) (Essex: Longman, 2002) at 13. ("There is no doubt that new technology stretches the law which is sometimes slow to react, and one problem has been the manner in which it has attempted to adapt existing legal paradigms to deal with the problems posed by technological developments.")
[516] R A Posner, *supra*, n. 25.

entry".[517] With over 90% of the OS market,[518] Microsoft had an installed base, encouraging software vendors to write compatible programs for its Windows OS. This installed base made it difficult for rival OS software providers to enter. Few programmers would invest time and money developing applications for OS that do not have a large installed base, because demand for such applications is low, making rival OS unattractive. Simultaneously, Windows OS users are unlikely to switch to other systems, because Windows allows them to choose from among a much larger number of compatible applications.[519] Consumers are also reluctant to switch to new networks because of investments in hardware and time spent learning a system. Brand name recognition and the consumer confidence it inspires may be even more powerful barriers preventing entry in information platform industries where consumers rely heavily on suppliers for continuing support. The result is a 'positive feedback' process in which more and more applications are written for Windows.

As **Fig 12** shows, once network saturation occurs, consumers are likely to remain with an established network because of the costs they have incurred in adapting to the network, and costs involved in switching to another one.[520] These 'switching costs' thus create substantial barriers to entry in digital markets. Because the "switching costs" for consumers in network markets are so high, they become "locked in" to Microsoft's network.[521]

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[517] *United States v. Microsoft Corp*. Findings of Fact, [1999] 84 F. Supp. 2d 9, 20 (D.D.C.)
[518] *Ibid*. at para.19 (finding that Microsoft's share of the market for "Intel-compatible PC operating systems" is at ninety percent).
[519] D J Teece and M Coleman, *supra*, n.30 at 814 ("[T]he more users of a given [computer operating] platform, the more complementary products that will likely be supplied to that platform. This will lower the cost or increase the value of the platform.").
[520] These include the compatible software foregone, the interoperability with users of that network and time involved in learning that platform in the first place.
[521] J E Lopatka and W H Page, 'Antitrust on Internet Time: Microsoft and the Law and Economics

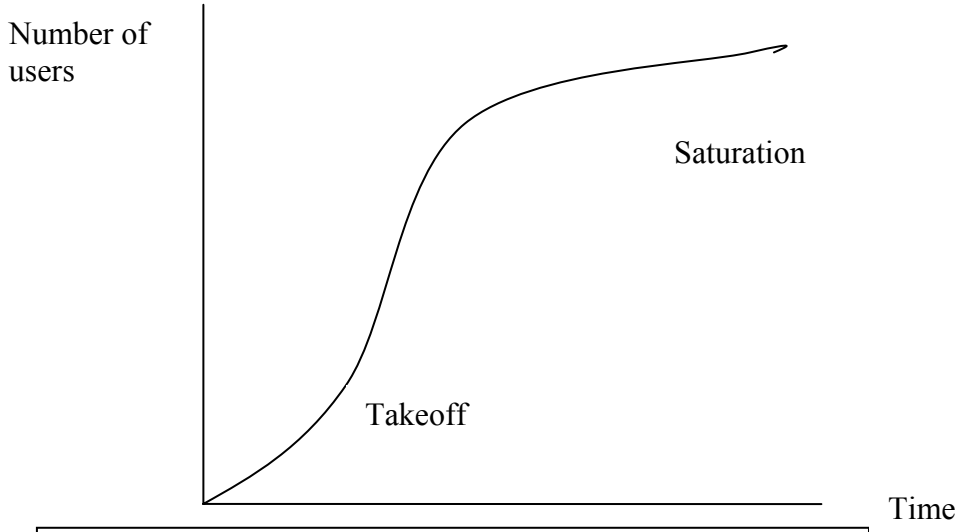

Fig. 12 Positive feedback systems follow adoption of new technologies in three phases: (1) flat during launch (2) a steep rise during takeoff as positive feedback kicks in (3) leveling off as saturation is reached. Source: Carl Shapiro and Hal R. Varian, *Information Rules*, (Boston, MIT Press, 1999), at p. 178.

Simultaneously, consumers' demand for one compatible technical standard leads network markets move from the joint existence of two or more incompatible products to coalesce around a single standard.[522] Hence, once copyrighted the digital content gains enough acceptance to be perceived by most consumers as the ultimate technological winner, the market "tips" and consumers migrate to that standard *en masse*.[523] Early users of a particular network often join

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of Exclusion', (1999) 7 Sup. Ct. Econ. Rev. 157 at p.170 ("Software vendors tend to write applications for the most popular operating system. The greater availability of applications in turn induces new users to choose that operating system. The market thus tips in favor of a single standard, to which the industry is locked in.").

[522] D A Balto and R Pitofsky, 'Antitrust and High-Tech Industries: The New Challenge', (1998) 43 Antitrust Bull. 583, at p.604 ("In industries characterized by networks even monopoly is seen by some observers as inevitable and merely an accommodation to consumer demand for a compatible technical standard."); D Rubinfeld, *supra* n.78, at p.876 ("With consumer preferences for uniformity in products and compatibility in complementary products, dominant firms operating with a single standard are likely to develop in dynamic network industries."); S Lohr, 'Open Windows: The New Math of Monopoly', N.Y. Times, 9 April 2000, § 4 (Week in Review), at 1 ("[Network markets] tend to naturally evolve toward one or two dominant companies (think Cisco in routers for Internet data or eBay in online auctions). They control the technology standards in their markets.")

[523] M A Lemley and D McGowan, 'Could Java Change Everything? The Competitive Propriety of a Proprietary Standard', (1998) 43 Antitrust Bull. 715, at p.721 ("[O]nce consumers perceive that a de facto standard has been established, tipping will occur very quickly.").

in anticipation of other users hopping on the bandwagon later.[524] This is seen in **Fig 13** below.

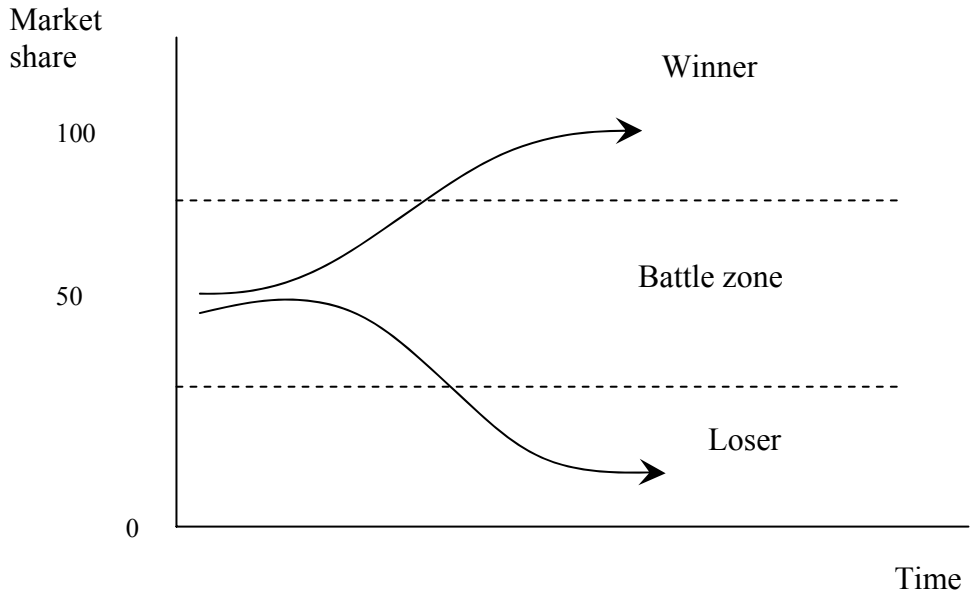

Fig 13 Positive feedback leading to market tipping; Source: Carl Shapiro and Hal R. Varian, *Information Rules*, (Boston, MIT Press, 1999), at p. 177

Tipping can occur rapidly because of network effects.[525] Consumers become 'locked in' to the product because of switching costs associated with moving from one network to another. The net result is that the product technology standard that is adopted can mean, that inferior products continue to dominate production decisions and consumer purchases.[526] Even if a new entrant promises a less expensive or technically superior product, users of the current network may

[524] Controversial examples of tipping include VHS versus Beta videocassette formats and QWERTY and Dvorak keyboard layouts. See P Lewin (ed), *The Economics of QWERTY*, (Hampshire: Palgrave, 2002).
[525] K Kelly, *New Rules for the New Economy, 10 Radical Strategies for a Connected World* (USA: Viking, 1998) at p.34, (Suggesting that in new network economies, the tipping point is significantly lower than in traditional ones because of low fixed costs, insignificant marginal costs and rapid distribution.)
[526] W A Sheremata, 'Barriers to Innovation: A Monopoly, Network Externalities, and the Speed of Innovation', (1997) 42 Antitrust Bull. 937 at p.958 (Describing how "consumers will get 'locked into' the first product that appears on a new platform, even when the product is technologically inferior").

not be willing to run the risk of losing their investments in that network. This consequence is sometimes referred to as path dependency.[527]

Courts and competition authorities adopting dynamic efficiency goals strive to provide the means for alternative products to be offered through mandating access to digital standards protected by copyright in order to ensure that the dynamic welfare gains promised by sacrificing static efficiencies are obtained.[528] There is no guarantee that the superior digital platform would win, given the incumbent's first mover advantages and its likelihood for aggressive competitiveness. Once the market has tipped it may be difficult or even undesirable to undo any anticompetitive effects that have arisen.

Digital copyright may persist beyond its useful economic life, and digital copyright monopolies possess inherent natural advantages that make them difficult to dislodge.[529] When the copyright owner is well entrenched, it may not feel compelled to continue to pursue efficiencies,[530] and is more likely to engage in harmful monopolistic conduct, including raising prices, impeding innovation, and reducing output. Tipping increases the leverage power of the winning technology, and may encourage exploitation of locked-in consumers, or fail to

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[527] R A Posner, *supra*, n. 39, at p.930 (Explaining "the issue of 'path dependence': an industry may be stuck with an inferior technology because of the cost advantage of the existing network").
[528] I Rahnasto, *Intellectual Property Rights, External Effects and Anti-trust Law*, (Oxford: Oxford University Press, 2003).
[529] Federal Trade Commission, 'Entering the 21st Century: Competition Policy in the World of B2B Electronic Marketplaces, Executive Summary', at 2, at http://www.ftc.gov/0s/2000/10/b26report.pdf (Oct. 2000). Part 3, at 29 ("[O]nce a marketplace monopoly is attained, it may be very difficult to dislodge."). See Chapter III, Part III.
[530] *United States v. VISA USA.*, Inc. 163 F. Supp. 2d 322, at 342 ("The higher the barriers to entry, and the longer the lags before new entry, the less likely it is that potential entrants would be able to enter the market in a timely, likely, and sufficient scale to deter or counteract any anticompetitive restraints.... Where barriers to entry are high, ... a monopolist would find it easier to raise prices because it would be unlikely that a competitor would, or could, enter the market.) see also Beltway on Top, Wall St. J., June 9, 2000, at A18 ("The only incentive to produce anything is the possession of temporary monopoly power.").

innovate and yet stifle future innovation by preventing switching to better alternative technologies. Even if the industry structure ultimately relies on a single digital standard, competition policy should still allow rival standards to battle it out in the marketplace. Even if it were true that successful copyright owners are often aggressive in price and innovation, competition is still necessary, if only because it is likely that consumers would be better off with several aggressive companies, rather than a single dominant firm.[531] Moreover, in addition to maintaining the possibility of competition on quality, rival standards also hedge against the risk that the owner's standard proves fundamentally flawed. While this approach bears similar shades to Harvard School theory, the focus here is not on market structure, but consumer welfare.

Ex post, courts and regulators act to prevent consumers from being 'locked in'. The feasibility of challenging an existing network monopolist therefore becomes critical. Rivals have to duplicate the network to enter the market, significantly increasing entry costs. Competition law therefore prevents the copyright owner from exploiting this bottleneck through mandating access to interface information. The outcome of *Magill* was therefore attributed to EU law subordinating market efficiency to ensuring *ex post* competition by imposing upon dominant firms a general duty to share as well as a duty to supply.[532] Similarly, competition law may also intervene *ex ante* to prevent premature

[531] K J Arrow, 'Economic Welfare and the Allocation of Resources for Invention', J Eatwell (ed.), *Essays in the Theory of Risk Bearing* (Chicago: Markham Publishing Co., 1971), at pp. 156-60. In terms of challenging the perspective at a theoretical level, Kenneth Arrow famously countered that competition provides the best spur to innovation.

[532] S B Opi, 'The Application Of The Essential Facilities Doctrine to Intellectual Property Licensing in the European Union and The United States: Are Intellectual Property Rights Still Sacrosanct?' (2001) 11 Fordham Intell. Prop. Media & Ent. L.J. 409; E P Mastromanolis, Insights from U.S. Antitrust Law on Exclusive and Restricted Territorial Distribution: The Creation of a New Legal Standard for European Union Competition Law, 15 U. Pa. J. Int'l Bus. L. 559, 562 (1995)

tipping to a possibly inefficient standard.[533] Given the seemingly awesome market power at the copyright owner's disposal, there seems little reason why competition, *ex ante* tipping, or *ex post*, should not be promoted by requiring access to the owner's copyrighted works.

It is then perhaps surprising to discover, as will be evident from the following discussion, that there has been a strong and growing movement arguing against third party access, even in the face of a 'tipped' market. Essentially, two arguments have been advanced. The first view develops the Schumpeterian argument that monopolies in digital markets are inherently fragile, and that 'lock-ins' if they occur, happen only because consumers voluntarily remain with the copyright owner's standard because they are better off doing so. Second, economic theory on path dependency leading to inferior products dominating digital markets is flawed because it may not be reasonable to expect competition law to know when it should intervene. After all, the competition law is only effective as the ability of those who implement it, and they may be constrained by bounded rationality.[534]

A. *Understanding the Dynamics of Digital Copyright Markets*

Dominant copyright owners would not engage in exclusionary conduct by refusing royalties from granting licenses to rivals and downstream customers, unless its market is fragile to new entry. An example of the owner's response is

[533] I Rahnasto, *supra,* n. 113 at p.190.
[534] The inability to fully understand and predict all future possibilities because courts and regulators are not omniscient.

'defensive leveraging, discussed earlier in the context of *Microsoft (EU)*.[535] Digital markets are highly dynamic and entry is easier relative to traditional markets. The extraordinary rate of innovation in digital markets may be due to the plentiful investment capital available worldwide for new technological start-ups, and the rapidity with which these start-ups can create new digital networks which can be quickly put into service due to instant scalability. The easier it is to create a substitute network, the less secure will be the network monopolist's monopoly against competition.[536] Significantly, William Baumol and Janusz Ordover note that:

> "In high technology industries, the upstream markets are likely to be of greater consequence for competition in the longer run. These are likely to be international in scope and less protected by entry barriers, and are apt to be characterised by greater fluidity in market share. Accordingly, less weight should be assigned to the current status of an undertaking in technologically evolving industries when analysing unilateral conduct."[537]

Market power is likely to be short-lived as new entrants with new and better products and technologies leap frog the current dominant players and 'steal' the market. To the extent that tipping maximises the size of the network, it immediately benefits existing consumers. Entrants may or may not succeed in convincing the incumbent's customers to switch to its product or standard.[538] Even if firms fail and are quickly eliminated, this 'hit and run' dynamism creates pressure on the incumbent comfortable with existing competition to look behind

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[535] See Chapter II, at Part IV.B.2(3).
[536] R A Posner, *supra*, n. 25, at p. 253.
[537] W J Baumol and J A Ordover, *supra*, n. 25 at 93.
[538] Microsoft succeeded in causing WordPerfect users to switch to Word, but failed to convince Netscape Internet browser users to switch to Internet Explorer. See D S Evans *et al*, 'The Rise and Fall of Leaders in Personal Computer Software' in *Microsoft, Antitrust and the New Economy: Selected Essays*, (Kluwer: Boston, 2002) at p.265.

its shoulder frequently enough to remain competitive. This creates an environment approximating contestable markets, which a Member of Parliament had argued to be the main goal of competition policy.[539] As Richard Posner observed:

> "Network effect tugs a market toward monopolisation. Yet oddly, also toward competition. The paradox is dissolved by understanding that competition to obtain a monopoly is an important form of competition. The more protection from competition the firm that succeeds in obtaining a monopoly will enjoy, the more competition will be to become that monopolist. A firm that will have the protection of both intellectual property law and economies of scale in consumption if it is the first to come up an essential component of a new economy product will have a lucrative monopoly, and this prospect should accelerate the rate of innovation."[540]

Copyright monopoly is rarely a barrier to radical innovation, since this tends to emerge from *outside* an established industry.[541] Access to the infrastructure provided by incumbent firms is therefore rarely important for ultimate success. Incremental innovation is not much affected by market structure either. This begs the question then of what innovation requires. The evidence is sketchy, but there seems to be a consensus that adequate protection of copyright or at least mechanisms for innovating firms to appropriate returns from their investment is crucial.[542] The ability of firms to exclude others as a business strategy therefore raises competition issues that turn on the proper assessment of market power. In high technology markets, monopolies can be particularly beneficial to consumers.[543]

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[539] S Iswaran, *supra*, n.5.
[540] R A Posner, *supra*, n.25.
[541] See Chapter I, Part II.D.2 (Describing how digital market innovation, in addition to be simultaneous, is also radical, rather than incremental.)
[542] T M Jorde and D J Teece, *supra*, n. 25 at 6.
[543] For example, some observers believe that the monopoly Microsoft acquired during the 1990s in operating systems for personal computers has been responsible for "the rapid evolution of the PC from a glorified typewriter and adding machine to a multimedia communication device. See J M Jacobson, 'Do We Need a "New Economy" Exception for Antitrust?', (2001) 15 Antitrust L.J 89,

In light of this self-correcting potential and importance of copyright in ensuring consumer welfare, some commentators have argued that competition law is too blunt a tool to apply rigorously to the digital markets,[544] while others have questioned whether network markets are especially prone to anti-competitive behaviour.[545] Efforts to hobble the winner in one round of innovation will be seen as diminishing the returns available from competing in such high-risk environments, thereby diverting resources to other sectors of the economy displaying less risk and affording less innovation.[546] It is submitted therefore that intervention *ex ante* tipping is rarely warranted.

Ex post tipping, dynamic efficiency losses must turn upon some perceptible form of loss in consumer welfare caused by 'lock-ins'. Interventionists argue 'lock-ins' lead to monopoly prices and inferior products.[547] The concept of lock-in rests on the belief that the free market competition does not allow the best quality standard to win. Products succeed in spite of inferior quality because consumers purchase it only because everyone else is using it, while in fact, each consumer would have preferred to use a different product. As, the European Commission argued:

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at p.92. By establishing a consistent worldwide standard for operating systems, Windows has allowed independent firms to write a nearly unlimited number of programs for word processing, spreadsheets, databases, games, electronic mail, instant messaging, Internet browsers, and other applications. See P Krugman, 'Making Windows Transparent', N.Y. Times, Nov. 4, 2001, § 4 (Week in Review), at 13.

[544] D B Kopel, *Antitrust After Microsoft: The Obsolescence of Antitrust In The Digital Era* (USA: Heartland Inst, 2001)

[545] S Liebowitz and S E. Margolis, 'Network Effects and the Microsoft Case', in Jerry Ellig, ed., *Dynamic Competition and Public Policy*, (2001) at pp.190-91 (arguing that network markets, such as software products and operating systems, are highly competitive even though some firms have large market shares)

[546] D J Teece and M Coleman, *supra*, n. 30.

[547] P A David, 'Understanding the Economics of QWERTY: The Necessity of History', in W.N Parker ed., *Economic History and the Modern Economist*, (Basil Blackwell: New York, 1986).

> "Due to the lack of interoperability … an increasing number of consumers are *locked into* a homogenous Windows solution … this *impairs the ability of consumers to benefit* from innovative work group server operating system features brought to the market by Microsoft's competitors. In addition, this *limits the prospect for such competitors to successfully market their innovation and thereby discourages them from developing new products* … (and will be) *confined to niche existences or not be viable at all*. There will be little scope for innovation – except for innovation from Microsoft."[548]

It is important to recognise a distinction between the *ability* of the copyright owner to exploit the inelasticity of its short-run demand for greater profits and the *incentive* to do so, given the much higher elasticity of its long-run demand under which the network effects can build – and unravel.[549] A firm producing a network good must fear that an increase in the current price might lead to greater current profits, but also to an unravelling of the network in the long run, causing the firm to gain short-run profits at the expense of profits later on. The net effect of the firm seeking to exploit its current ability to raise its price could be a reduction in the market value of its stock. Indeed, there is evidence that network markets remain highly competitive despite domination by a single standard owner.[550] For example, market dominance could enhance market efficiency because the market is actually larger than it would otherwise be. More applications will be offered by software developers who are confident of the standard's durability. The average price charged to consumers could be lower than it otherwise would be due to the increased elasticity from network effects. [551]

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[548] *Microsoft,* Comp C-3/37.792 of 24 March 2004 at para. 694 and 700. (emphasis mine)
[549] In common parlance, this means that the owner stands to gain much from not raising prices, and stands to lose as much from raising them.
[550] R Prentice, 'Vaporware: Imaginary High-Tech Products and Real Antitrust Liability in a Post-Chicago World', (1996) 57 Ohio St. L.J., 1163, at p.1229. ("There are many examples of network markets that started out as competitive but ultimately came to be dominated by one or a few firms. In the video recording market, the VHS format achieved such an advantage over the Beta format, and in computer operating systems, Microsoft prevailed over IBM, Apple Computer, and Novell.")
[551] R B McKenzie, *Digital Economics: How Information Technology has Transformed Business Thinking* (USA: Praeger, 2003)

Monopolies in network industries could also establish uniform standards that make it easier for consumers to connect to the network and interact with other users.[552] The competitive process inevitably results in the elimination of some, perhaps all competitors. By being the most innovative, efficient and responsive to customers' wishes, copyright owner may well be the last one standing. As Richard Whish warned, it would be strange and indeed harmful if such efficient market outcomes were penalised.[553]

Two US economists, Stan Liebowitz and Stephen Margolis drew important correlations between market shares and product quality, as indicated by computer magazine reviews.[554] A significant outcome was seen in the markets for personal finance software (PFS) and software for spreadsheets. Three software brands competed in the PFS market: Quicken by Intuit, Microsoft Money and Managing Your Money (MYM) by Meca. In the late 1980s, MYM was initially considered the best and most powerful product in the category. When Quicken was introduced, it received less positive reviews as it was not as powerful as MYM.[555] Over time Intuit improved Quicken, adding more sophisticated features. As the first two graphs in **Fig.13** show, by the early 1990s, it was considered at

[552] S Labaton, 'Airlines and Antitrust: A New World. Or Not', N.Y. Times, 18 November, 2001, at § 3. ("The old antitrust principles do not apply easily because there are countervailing benefits to consumers-like lower prices, standardization or more frequent service-when control of the industry is in the hands of a few companies."). The benefits of uniform technological standards are evident in the contrast between wireless phone performance in the U.S. and most of the rest of the world. The United States never was able to settle on a single standard for wireless phone technology "and that blunder has resulted in a patch-work of multiple, incompatible technologies." W S Mossberg, 'A Guide to the Lingo You'll Want to Learn for Wireless Technology', Wall St. J., 28 March, 2002, at B1. By contrast, Europe and most other countries settled on a single standard thus have "better and more innovative wireless phones and wireless services."

[553] R Whish, *Competition Law*, 4th ed, (UK: LexisNexis, 2003) at p. 11.

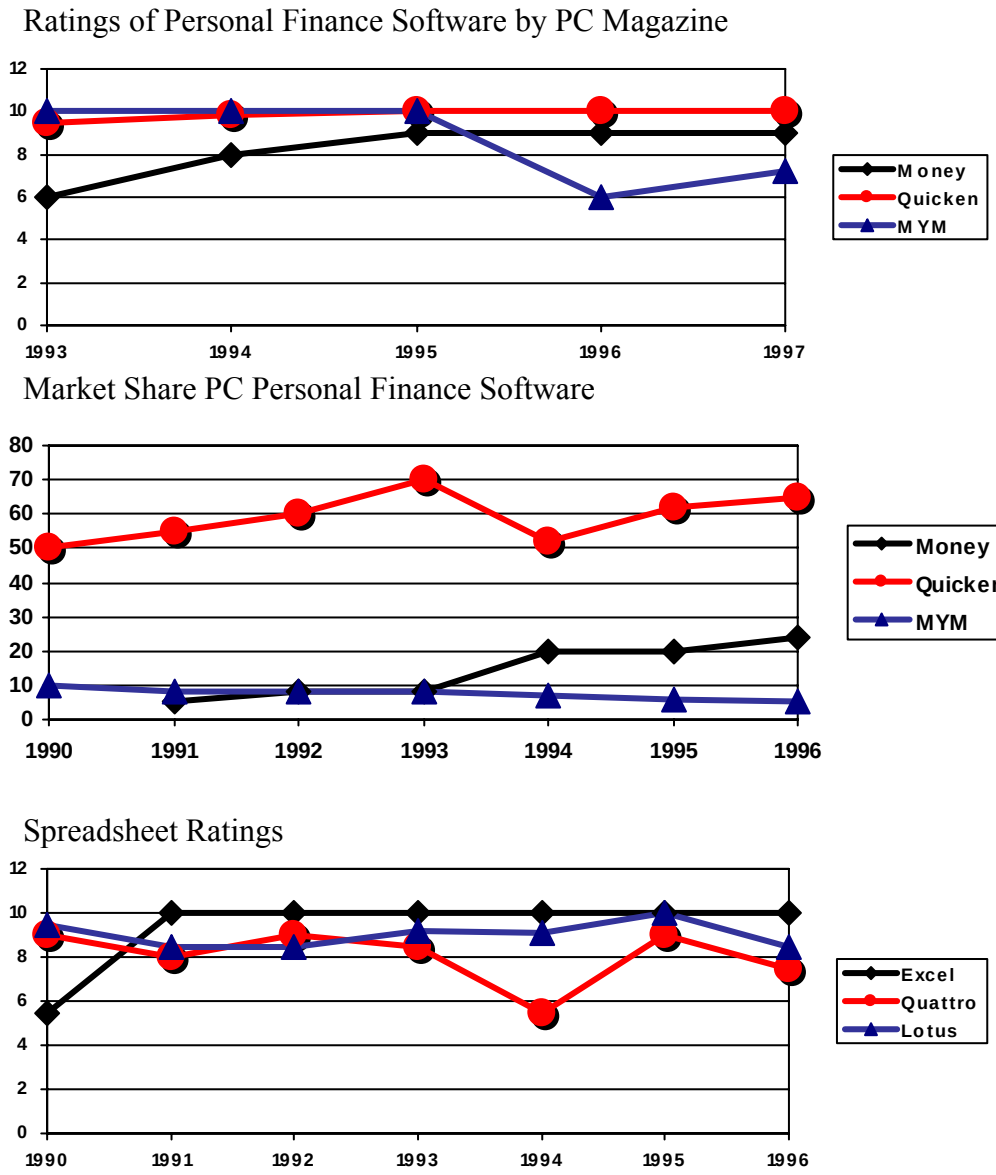
[554] S E Margolis and S Liebowitz, *Winners, Losers & Microsoft: Competition and Antitrust in High Technology* (Oakland: The Independent Institute, 2000). (Giving a detailed account on how standardisation of measurements were resolved in each case.)

[555] S E Margolis and S Liebowitz, 'Network Effects and the Microsoft Case', *The Economics of QWERTY*, P Lewin, ed., (New York: Palgrave, 2002) at p.225.

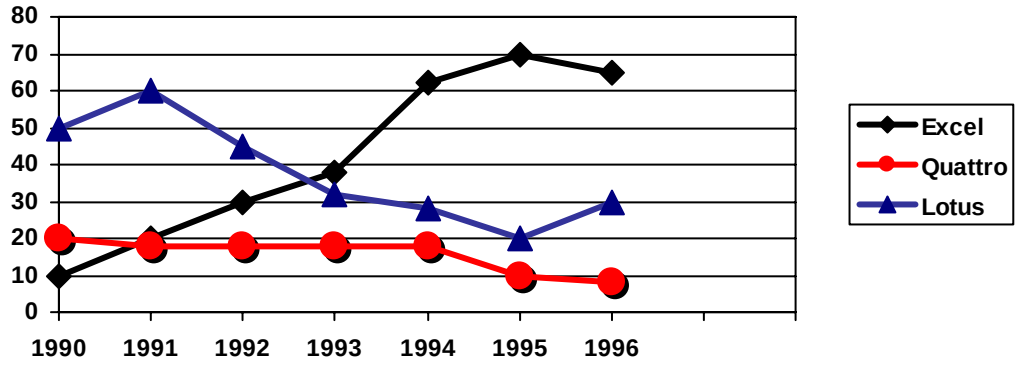
least the equal of MYM, and by the mid-1990s, Quicken was clearly considered the best product. In 1991, Microsoft introduced its Money program for Windows. Quicken's retention of its market leadership was unsurprising given its high quality as indicated in successful reviews. According to Microsoft's critics, however, Microsoft should have been able to leverage on its ownership of the Windows OS to achieve a dominant position, independent of the quality of its software. Microsoft produced a relatively inferior product, and failed to tip that market. Indeed, the PFS market share graph shows one dominant firm followed by another dominant firm, or what is known serial monopoly. Market shares changed so rapidly that the concept of lock-in and tipping seems out of place.

The second two graphs in **Fig. 14** show Borland's Quattro, Lotus's 1-2-3 and Microsoft's Excel competing in the spreadsheet market. This time, Excel's consistently high ratings tipped consumers into using Microsoft's product, and allowed it to maintain high market shares. In contrast, former market leader Lotus saw its market share fall with its ratings relative to Microsoft. In every case, there was a positive correlation between the review ratings given to the product and its market share. Thus the intuition is that where the incumbent was replaced, the rival's product is of a higher quality or technologically more advanced in some way.

Fig. 14: Graphs illustrating studies by Margolis and Liebowitz on market leadership in software industries.



Market Share, Spreadsheets



It is unsound policy to base regulatory action simply on possibilities, particularly where those presenting them acknowledge no obligation to subject them to rigorous empirical tests. The theory of harmful 'lock-ins' simply asserts that under certain assumptions, the possibility exists. If competition law is to intervene based on anticompetitive network effects, courts and regulators ought to find at least one clear instance of it. However, the study above shown the opposite: in the real world, good products have won. Prevailing software standards at each time period were regarded by software consumers and reviewers as the best, regardless of the whether the undertaking also owned the OS. Despite Microsoft's market power due to Windows, its products won when they were good, and lost when they were not. Confirmation of 'lock-ins' require evidence of non-adoption of existing better products. Testing for inertia requires comparing the rate of change in actual market shares with the ideal rate of change, which is considerably more detailed than empirical data offers.

Further, the belief that inferior products will follow lock-ins wrongly assumes that programmers hired by the incumbent lack or lose creativity. Microsoft benefits from new ideas as much as smaller firms. Investors are just as

eager for large firm stocks to perform well as they are for small firm stocks. A lazy board of directors will quickly see their stocks acquired and the board replaced by infuriated shareholders. Software markets require producers to continually add new functions to their products. Unlike consumers who want the same Big Macs they had the day before, software does not vanish or suffer in quality on consumption. Consumers have little incentive to purchase new software from the dominant vendor unless new and significant improvements are added. In addition to speed and intuitiveness, software requires added functionality. Just as speed may come with faster processor chips, practice overcomes inherent design imperfections. The natural inclination of consumers is therefore to stick to a familiar version of a program unless the new one performs tasks not available in the old version. The added consumer benefit from this is savings: later versions usually cost less than the sum of the prices that individual components command. Otherwise, consumers would not purchase new generations of software products as a whole.[556] When good products win, consumer welfare wins. The policy implication of this is that courts and regulators can help ensure that consumers get the best products by keeping regulatory impediments out of entrepreneurial competition to establish their mousetraps in the marketplace.

B. *Third Degree Path Dependence and More Antitrust Speculation*

Where refusals to license seem anticompetitive at first blush due to concerns over path dependency, it is possible the regulators and courts have been misled. There is a view that there are three possible efficiency outcomes where a

[556] S J Liebowitz and S E Margolis, 'Networks, Antitrust Economics, and the Case against Microsoft', in *Winners, Losers & Microsoft*, (Oakland: The Independent Institute, 2000) at p. 259.

dynamic process exhibits path dependency.[557] First-degree path dependency occurs where the future impact of initial actions are fully appreciated and taken into account. There is no error or inefficiency in those decisions, despite the sub-optimality of the situation in a given period, and no remedy is required.[558] Second-degree path dependency recognises that information is never perfect. Efficient decisions may not be efficient in retrospect. However, the inferiority of a choice cannot be known at the point where the choice was made. In this situation, outcomes though inefficient are unavoidable and again should not warrant remedy.[559] Third degree path dependency occurs where initial conditions lead to an inefficient outcome, but it was possible to recognise and avoid the inferior outcome at the point where the decision is made.[560]

Different constructions of the *Microsoft* cases lead to different claims of path dependence. This consequently determines whether competition law should have intervened. First-degree path dependence assumes that Microsoft's products and other rivals were essentially the same and eventual market choices of Microsoft was arbitrary and lead to a significant and durable outcome. Courts and

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[557] S J Liebowitz and S E Margolis, 'Theories of Path Dependence', in *Winners, Losers & Microsoft*, (Oakland: The Independent Institute, 2000) at p. 49.

[558] An example of this would be someone buying a house, having properly taken into account future prices, incomes and family size developments. Thus the house may have been too big at first when moving in as newlyweds, then just right with children, then too small with grandchildren, then too big later on when children and grandchildren move out. All this may have been predicted fairly well.

[559] An example of this would be someone buying a house without possibly being able to know that five year down the road a sewage treatment plant will be built nearby, drastically lowering property prices and the neighbourhood amenities nearby. Here, there is dependence on past conditions which lead to regrettable outcomes, and the person may not have bought the house had he known in advance what was going to happen. But because of limited knowledge, the path dependence is not inefficient in any meaningful sense.

[560] An example of this would be where someone bought a house, knowing that a sewage plant would be built, but allowing the purchase to go through anyway because his friends were all buying houses there, and he values being part of that neighborhood. He would rather have bought a house away from a sewage plant, and so would his friends, but they were somehow unable to coordinate their actions.

regulators cannot use static or dynamic efficiency models to predict which of several equally efficient possibilities will be chosen and the outcome is completely random. If the argument is taken a step further to second-degree path dependence, regulators may assert that Microsoft's products are notably inferior. However, during the time Microsoft dominated the standard, it might not have been known that some other standard would be better in the future. *Ex post*, it may appear that the market's choice of Microsoft was a mistake, although it was not a mistake given the information when the market tipped.

The argument can go further, and indeed, as the *Microsoft* cases show, they do. Regulators may claim that at the beginning, sufficient information existed to determine that other platforms were superior, thus making a case for third degree path dependence. This may occur if at the time that Microsoft introduced its products, most consumers preferred rival products, but were unaware that others had similar preferences. In that case, a slim lead for the 'inferior' Microsoft standard might have propagated into eventual market dominance. Refusals to grant license to interface information therefore impedes technological development, and translates into an anticompetitive abuse. Alternatively, if it were widely understood that switching to the rival platform would confer greater benefits than the switching cost of doing so, but are forced to remain with Microsoft, this would be another instance of third degree path dependence. This has yet to occur because each consumer prefers Microsoft's platform, given that all other users and developers use it.

There is neither convincing theory nor empirical support for this

proposition. Indeed, empirical evidence suggests that third-degree path dependence, if it exists, is so rare that it should not be the basis for regulatory intervention.[561] Although markets do not always choose the best technology, there are good reasons to expect it to be very unusual for consumers to choose the wrong technology. Pernicious 'lock-ins' may exist, but it hardly follows that consumers are thereby locked into inferior products. While Microsoft, by blocking access to its APIs through its copyright may have increased its market share, it is no indication of abuse. Such outcomes hurt competitors, not consumers. There is a difference between proving the existence of inefficiency and proving its absence. If regulators assert that they have identified a remediable inefficiency, the onus is on them to prove it. In the same way that the law presumes an accused person innocent unless proven guilty, it seeks to minimise the costs of incorrectly identifying inefficiency by erring on presumption that the market outcome is efficient unless proven otherwise. It would therefore be wrong for regulators to assert that without evidence of inefficiency, one may presume to have proven the outcome is efficient.[562] It would be surprising to learn of an anatomist examining a human eye and declaring that its design was inefficient and that he could have done better. The line between conviction and paranoia is a fine one. Unless there is clear proof of consumer harm in tipped digital markets flowing from refusals to license, competition law has no reason to intervene.

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[561] S J Liebowitz and S E Margolis, 'Dismal Science Fictions: Network Effects, Microsoft and Antitrust Speculation' in Peter Lewin (ed), *The Economics of QWERTY*, (Hampshire: Palgrave, 2002) at 239-40. (Also arguing that policy makers shouldn't go about correcting markets until they have concrete proof that markets have failed.)

[562] P A David, 'Path Dependence and the Quest for Historical Economics: One More chorus of Ballad of QWERTY' (1997) Discussion Papers 020, Oxford University, Economic and Social History. at p. 13 at http://ideas.repec.org/e/pda76.html at p. 13..

IV. EVALUATION

Competition policy focusing on dynamic efficiency seems to sit most comfortably with the utilitarian justification of copyright. It recognises that digital markets are often highly concentrated, but a lack of rivals does not indicate a lack of competition. More SMEs will not necessarily mean better quality competition. Indeed, monopolistic or oligopolistic markets are often the most efficient market structure. Courts evaluating claims under Section 47 should therefore look not for a causal link to harm to individual competitors, but harm to the competitive process. This means that a dominant copyright owner may compete, whether against the competitive fringe in its primary market or against potential competitors, as vigorously as a firm in an ordinary competitive market would be, provided it refrains from employing tactics calculated to drive an equally or more efficient firm from the market.

A focus on dynamic efficiency also recognises that static efficiencies do not adequately take into account both the interests of the public as well as the copyright owner. Consumers are likely to be better off in the end if owners were allowed to enjoy the full extent of their market power, particularly in primary markets. In digital markets, this power is likely to be temporary due to the Schumpeterian gale of ‘creative destruction’. Further, dynamic rather than static efficiency properly reflects the owner’s continued right to control access to its work following the first sale.

Finally, the fact that the dominant copyright owner is buttressed by network externalities and may be hard to dislodge even by firms with seemingly superior technology has no significance in competition law itself.[563] Even in network markets, monopolies are fragile, and owners who have the ability to exploit consumers prudently refrain from doing so in order to prevent their networks from unravelling. As a Member of Parliament aptly illustrates:

> "Will the public suffer higher cost? This is inevitable especially in the short term. However, like the COE,[564] I believe that the market will adjust itself. Copyright owners cannot demand too high a price for their work without the risk of pricing themselves out of the market."[565]

Empirical studies have shown that good products win the standards battle, and consumers choose to be 'locked-in' to these good products. There is therefore no loss in consumer welfare simply because the market has tipped. Courts and regulators in Singapore should also be aware of the different degrees of path dependency, and intervene only if the inefficiency can be meaningfully prevented *ex post*.

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[563] *Independent Serv. Org. Antitrust Litig. CSU*, [2000] 203 F.3d 1322, 53 U.S.P.Q.2d (BNA) 1852 (Fed. Cir.) at 1328. United States Department of Justice and Federal Trade Commission, Antitrust Guidelines for the Licensing of Intellectual Property at § 2.2 ("If a patent or other form of intellectual property does confer market power, that market power does not by itself offend the antitrust laws. As with any other tangible or intangible asset that enables its owner to obtain significant supracompetitive profits, market power (or even a monopoly) that is solely "a consequence of a superior product, business acumen, or historic accident" does not violate the antitrust laws. Nor does such market power impose on the intellectual property owner an obligation to license the use of that property to others. As in other antitrust contexts, however, market power could be illegally acquired or maintained, or, even if lawfully acquired and maintained, would be relevant to the ability of an intellectual property owner to harm competition through unreasonable conduct in connection with such property.")

[564] This refers to the Certificate of Entitlement that vehicle buyers in Singapore must purchase.

[565] A K Bin Abdul Ghani, Singapore Parliamentary Debates, 16 November 2004 at: http://www.parliament.gov.sg:80/reports/public/hansard/title/20041116/20041116_S0004_T0003.html#1

However, it is difficult to be more specific than that. Aggressive competitive conduct beneficial to consumers and aggressive exclusionary conduct deleterious to consumers may look strikingly similar.[566] Commentators like Ronald Cass and Keith Hilton admit: "Ultimately, we *do not know* whether network markets have sufficiently distinctive characteristics from other markets to merit different treatment under the law."[567] What is clear is that to the extent that efficiency is the goal of competition policy, it should not be enforced where competition would be less efficient than it would be under the refusals to license. Costs to static efficiency are outweighed by the economies of centralising production in a dominant copyright owner. There would not be justification for using competition laws to attain goals unrelated or antithetical to efficiency. Perhaps this cautious approach does not give the "best of all possible" market outcomes. Perhaps it is the only possible one. Possible worlds can mean only 'worlds that could have occurred, but did not'. As C S Lewis explained, the idea of 'could haves' involves too anthropomorphic a conception that should dispel the need for further prediction.[568]

The final Chapter aims to articulate the legal approaches courts have taken to refusals to license cases. An awareness of the possible approaches, coupled with a sound understanding of the goals of competition policy allows competition rules to develop in a coherent and predicable fashion. At the same time, those applying it need to be flexible and astute enough to recognise that indicators of

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[566] R D Blair and A K Esquibel, 'Some Remarks on Monopoly Leveraging', (1995) 40 Antitrust Bull. 371, at p.372.
[567] R A Cass and K A Hylton, 'Preserving Competition: Economic Analysis, Legal Standards, and Microsoft' in David S. Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*, (Boston: Kluwer Academic Publishers, 2002) at 449. (Emphasis mine)
[568] C S Lewis, *The Problem of Pain* (San Francisco: Touchstone Books, 1940) at p.17.

whether those goals are achieved or not may vary from one industry to the next. When courts and regulators understand this, they can condemn or approve conduct with relative confidence.[569]

[569] F H Easterbrook, 'Does Antitrust Have a Competitive Advantage?', (2000) 23 Harv. J.L. & Pub. Pol'y 5, at p.8 (stating that regulators can "condemn or approve [conduct with clear competitive effects] out of hand").

CHAPTER IV:
♦CORE♦

I. INTRODUCTION

Wisdom denotes the pursuing of the best ends by the best means.

Frances Hutcheson[570]

A final piece remains to developing the competition law framework for regulating access to digital copyright content under the Singapore Competition Act 2004. It is important to know why competition law applies, the form these rules take at the interface, and the goals directing competition policy. Yet, if there were no understanding of how these come together in the actual analytical process, everything that has gone before would come to naught. It would be like a footballer knowing why he was in the middle of a pitch, knowing the rules, seeing the goal but not knowing quite how to dribble through the opposition and shoot to score. Chapter IV therefore concludes the analysis by examining the means used to pursue the ends of competition policy. This is the quest for the immutable core of digital copyright.

Cases in the EU and US have generally taken three approaches. The first approach considered in Part II springs from the law of property. Under this property rights approach (PRA), immutability turns upon whether digital copyright should be treated like a species of real property. If so, rules governing access over real property, such as easements over land would apply by analogy to copyright. There is both convenience and certainty in extending established rules rather than inventing new ones. However, if reason compels a conclusion that

[570] E Knowles ed., *The Oxford Dictionary of Quotations*, 5th ed. (Oxford: Oxford University Press, 1999) at p.396.

copyright should not be treated like real property, competition law must then decide whether the threshold for finding abuse should be more stringent, or less.

Part III presents an approach more aligned with traditional copyright doctrine. Liability under the specific subject matter approach (SSMA) turns on whether the refusal falls within the 'scope' of the owner's copyright. If it does, the alleged abuse is unimpeachable. Conversely, should the courts find the conduct to be outside the copyright grant, competition law will apply with its full rigour. While the PRA focuses on the extent exclusionary rights may be exercised *ex ante* grant, the SSMA looks at it from an *ex post* perspective. Neither, however, explicitly considers the economic effects of the refusal. Since competition law is very much rooted in economic theory, a compelling argument may be made that the means chosen at the Interface should be consistent.

Perhaps recognising the need to align the two regimes through economic analysis, some courts have applied the cost-benefit approach (CBA) considered in Part IV. Judges here attempt to weigh the socio-economic costs of refusals to license against the benefits of doing so. In doing so, they must first adopt one or more of the goals discussed in Chapter III. Next, they need to apply this analysis to make an economic assessment of the impact of a refusal to license. This rigorous cross-disciplinary analysis makes this the most demanding approach. However, it may also be the one that would allow courts to come closest to getting the calibration right. Part V evaluates the three approaches and concludes by presenting a novel, unified approach, which may bring the law closest to getting the 'right' result.

II. THE PROPERTY RIGHTS APPROACH

While many cases on both sides of the Atlantic have used the PRA,[571] none have authoritatively analysed proprietary nature of copyright.[572] The first stage in the analysis determines if copyright is really a species of real property rights. If so, refusals to license will simply be governed by the same competition rules that apply to other tangible property. However, as the discussion on dynamic efficiency in Chapter III suggests, the answer is likely to be 'no'. This then requires a second step to determine whether copyright should be subject to (a) no regulation (b) more regulation (c) less regulation than tangible property.

A. *Copyright as Real Property*

Individuals exploiting resources in the pursuit of their self-interest create negative externalities on public welfare.[573] Where they incur no cost from creating these externalities, they will seek to maximise their personal satisfaction, even at an inordinate cost to society.[574] Further, without requiring uses to pay for use, there would be overexploitation over the resource. This has been termed the

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[571] See for example, *Independent Serv. Org. Antitrust Litig. CSU*, [2000] 203 F.3d 1322, 53 U.S.P.Q.2d (BNA) 1852 (Fed. Cir.) ('*Xerox*'); *United States v. Microsoft* [2000] 253 F.3d 34, 346 U.S.App.D.C. 330, 2001-1 Trade Cases P 73,321; *EC Commission v. Microsoft* [2004] Case T-201/04. G Tritton, *Intellectual Property in Europe,* (Sweet & Maxwell: London, 2000), p. 836. ("(O)wners of intellectual property in a dominant position are not necessarily allowed to appropriate the full inherent value of that property but must economically justify any exercise of their rights and show that such does not adversely affect the consumer or residual competition … this school of though that appears to have been adopted by the ECJ and CFI.")

[572] M A Lemley *et al*, *Software and Internet Law* (Gaithersburg: Aspen Law & Business, 2000), at p.543. (Noting that there "is substantial disagreement as to whether intellectual property rights are "property" in the ordinary sense of the term.)

[573] Externalities are spillover effects on the welfare of others caused by individuals in the pursuit of their self-interest. An example are fumes from a factory's production process. H M Spector, 'Intellectual and Industrial Property Rights' (1989) 8 EIPR 270, at p.271.

[574] *Ibid*.

'tragedy of the commons'.[575] Harold Demsetz argued that these externalities were best contained through property rights so individuals would internalise the costs of these externalities, thereby having an incentive to produce more efficiently.[576] Giving a property rights in itself does not guarantee that property owners may not invest sufficiently in their property if others can free ride on their investment. Efficiency under the PRA therefore requires the elimination of free riding through the ability of excluding others using their property rights.[577] The rationale for copyright therefore lies in its role in allowing the owner to grant licenses to those it deems able to exploit those rights for its own gain.[578] In theory, once copyright law settles on clear property rules, parties will be in a better position to assess prospectively foreseeable economic costs and agree on a reasonable license agreement to the digital standard. Given the obvious benefits in avoiding litigation, it is perhaps unsurprising that various stakeholders have called for their equivalence.[579]

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[575] M Perelman, *Steal This Idea: Intellectual Property Rights and the Corporate Confiscation of Creativity* (New York: Palgrave, 2002)

[576] Thus the factory should be given the right over its land and be subject to pollution levies H Demsetz, 'Toward a Theory of Property Rights' (1967) American Economic Review LVII. ("A primary function of property rights is that of guiding incentives to achieve a greater internalization of externalities."). In a world without transactions costs, Demsetz argued, the creation of a clear property right will internalize the costs and benefits of an activity in the owner, and permit the sale of that right to others who may value it more. Once transactions costs are taken into account, Demsetz believed that the creation or alteration of property rights could be explained by asking whether the social gains from internalizing an externality exceeded the costs of doing so.; Harold Demsetz's 'tragedy of the commons' has found support in Ronald Coase. The Coase Theorem suggests that an efficient allocation is always the result of any initial distribution of property rights, so long as these rights can be exchanged without transaction costs. R Coase, 'The Problem of Social Cost', (1960) 3 Journal of Law and Economics, 1-44; see also G Hardin, 'The Tragedy of the Commons', (1968) 162 Sci. 1243, at p.1244.

[577] This is nothing more than the theory underlying copyright in Chapter I. See Chapter I, Part III.

[578] M L Katz, 'Intellectual Property Rights and Antitrust Policy: Four Principles for a Complex World', (2002) 1 J. Telecomms. & High Tech. L. 325, at pp.328-29 (Explaining the importance of the Coase theorem in grappling with complexities of intellectual property and antitrust law).

[579] F H Easterbrook, 'Intellectual Property is Still Property' (1990) 13 Harv. J.L. & Pub. Pol'y 108. ("Intellectual property is intangible, but the right to exclude is no different in principle from General Motors' right to exclude Ford from using its assembly line ... a right to exclude in intellectual property is no different in principle from the right to exclude in physical property. . . . Except in the rarest case, *we should treat intellectual and physical property identically in the law* which is where the broader currents are taking us.") (Emphasis mine); United States Department

The first problem with this is that the compulsory licensing remedy in competition or IP law finds no parallel in the law of licences.[580] The closest approximation lies in the law of easements. Common law recognized easements in roads and waterways served to enable access to surrounding private property, allowing the land to be more efficiently exploited.[581] By analogy, it has been suggested that compulsory copyright licenses should be ordered when the collective interest of society to access content overrides the interest of owner.[582]

However, arguing for access based on the existence of a 'tragedy of information commons' displays a lack of appreciation for the nature of information. While a 'tragedy of the commons' may occur when a finite natural resource is depleted by overuse, it cannot apply to non-rivalrous ideas. Copyright does not prevent congestion, interference or strife as real property might.[583] Instead, it artificially interferes with the market mechanism for resource allocation to give owners a supernormal profit.[584] This economic cost can be justified only to

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of Justice and Federal Trade Commission, Antitrust Guidelines for the Licensing of Intellectual Property §2.2 (1995) ("For the purpose of antitrust analysis, *the Agencies regard intellectual property as being essentially comparable to any other form of property*".) (Emphasis mine); OECD, *Competition Policy and Intellectual Property Rights*, (DAFFE/CLP(98)18, 1992) at 11. (Noting that "if not granted *property rights* in their work, widespread copying could be expected to occur, diminishing the returns to the innovator and the incentive to innovate and recoup for his investment and to induce others to strive to innovate in the future." (Emphasis mine)

[580] As a rule, property law governing licensing in Singapore has never compelled access to the owner's land. An exception arises where the owner had acted inequitably. In such a case, the court will imply an equitable license under the doctrine of proprietary estoppel. This invocation of this doctrine depends on the owner making a representation which the other party has relied upon to its detriment. While refusals to license cases at the interface have sometimes involved discontinuance of access, none have ever turned on the issue of representation and principles of equity. See Tan S Y, *Principles of Singapore Land Law*, (Singapore: Butterworths, 2001) at p.521.

[581] *Ibid*.

[582] L Lessig, 'The Architecture of Innovation', (2002) 51 Duke L.J. 1783, at p.1789; Likewise, Judge Kirby's approach challenges us to conceptualise a more principled construct of intellectual property in accordance with the notion that "no right is absolute."

[583] R P Merges *et al*., *Intellectual Property in the New Technological Age*, 3rd edn, (New York: Aspen, (2003) at pp.15-16.

[584] See Chapter I, Part II.B.

the extent necessary to provide incentives to create, and does not map to the justification for real property.

Real property rights may be conferred to contain negative externalities caused by free riding. It focuses on whether the free rider benefited from using the property, and if so whether it paid for that benefit. "Free riding" encompasses conduct that captures uncompensated positive externalities as well as conduct that reduces the return to the copyright owner to such an extent that it cannot cover its costs. Only the latter is of concern, and free riding as a concept will not help us to distinguish the two. Copyright actually reduces *positive* externalities. Once the copyright content has been produced, every access multiplies available resources by spreading the content, permits others to enjoy it without suffering form depletion or pollution in the same way real property might.[585] The proper focus is therefore on the copyright owner, not the free rider. Again, this shows that equating copyright with real property rights is inappropriate. As Canadian Supreme Court recognised,

> "*(C)opyright law is neither tort law nor property law in classification, but is statutory law*. It neither cuts across existing rights in property or conduct nor falls in between rights and obligations heretofore existing in the common law. Copyright legislation simply creates rights and obligations upon the terms and in the circumstances set out in the statute."[586]

The more orthodox view then is that while copyright may be transacted broadly by analogy to property rights in tangible property, they are not real

[585] H S Reeves, *Property in Cyberspace,* (1996) 63 U. Chi. L. Rev. 761, at p.785.
[586] *Compo Co. Ltd. v. Blue Crest Music Inc*., [1979] 45 C.P.R. (2d) 1, 13 (Sup. Ct. Canada). (Emphasis mine).

property rights, and should not be so treated under competition law.[587] This view is clearly aligned with the intent of the Singapore Copyright Act, as seen by Section 194, which provides that "(s)ubject to this section, copyright shall be transmissible by assignment, by testamentary disposition, or *by operation of law as personal or movable property*".[588] Therefore, rather than seeking legitimacy through analogy with real property, commentators have sensibly argued that a independent regime be devised. [589]

B. *Three Alternatives*

If competition rules governing copyright based on equivalence to real property are inappropriate, three alternatives emerge. The first is the formalistic view taken by the *Xerox* Court: competition law will never interfere with the owner's prerogative in refusing to license as long as its copyright had been legally obtained.[590] Of the three thresholds for 'abuse', this is the highest. The second, diametric view gives the lowest threshold: competition law must scrutinize refusals. Copyright owners exert greater control over their work post-sale, and network effects buttressing their market power create a real likelihood of consumer harm. Holdings by the district court in *Microsoft (US)*, and *Kodak* are consistent with this approach. The final view seeks a middle ground. Refusals are

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[587] W R Cornish and D Llewellyn, *Intellectual Property: Patents, Copyright, Trademarks and Allied Rights* (London: Sweet & Maxwell, 5th Edition, (2003) at p.5. (Arguing that intellectual property rights … are *dealt with by broad analogy to property rights in tangible property*") (Emphasis mine)

[588] Emphasis mine. Similarly, Section 41(3) of the Singapore Patent Act (Cap 221, 2002 Rev. Edn.) provides: "Any patent or any such application or right shall vest *by operation of law in the same way as any other personal property* and may be vested by an assent of personal representatives." (emphasis mine)

[589] M A Lemley, 'Property, IP and Free Riding', (2004) John M. Olin Program in Law and Economics, Working Paper No. 291, at p. 56, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=582602

[590] *Xerox*, *supra*, n.2. See discussion in Chapter II, Part IV.A.2.

prima facie unobjectionable unless there is clear evidence of anticompetitive abuse unjustified by the copyright grant. This view is characterised by *IMS Health* and *Microsoft (EU)*, seen from their requirement that complainants offer a 'new product' for which the owner has failed to meet consumer demand.

1. *Copyright Formalism*

It has been argued that market power enjoyed by the dominant copyright owner stems from national copyright laws, rather than a manifestation of market superiority.[591] This view finds some support in TRIPS, which acknowledges that compulsory licensing in the context of patents is a form of inference with property rights, and should be strictly limited.[592] It follows that since copyright law expressly sanctions the owner's refusal to license, any market distortions resulting from this exercise of copyright cannot then amount to an "abuse" under competition law as long as the copyright itself was properly obtained.[593] Advocates of copyright formalism argue that competition law interference threatens dynamic efficiency. Competition should be promoted through tweaking copyright law.[594]

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[591] J C Burling, *et al*, 'The Antitrust Duty to Deal and Intellectual Property Rights', (1999) 24 J. Corp. L. 527 at p.533;

[592] Marrakesh Agreement Establishing the World Trade Organization Annex 1C. 33 ILM 81 40 (1994). Article 31 lists 12 conditions for compulsory licensing of patents. Essentially, where the license is granted as relief to anticompetitive practices, a license may be granted on non-exclusive or non-assignable basis based on its factual merits. "Adequate remuneration" must be given, and both the sum and the licence's validity are subject to judicial review. The owner is entitled to terminate the license "if circumstances change".

[593] This is a more extreme view The traditional misuse doctrine would provide the only exception to this competition immunity for refusals to license IPRs.

[594] See discussion in Chapter I, Part III. Indeed, some have identified competition laws as being one of the 'culprits' behind deterioration in national competitiveness, and have called for its abolition. L Thurow, 'Let's Abolish the Antitrust Laws', N.Y. Times, 19 October 1980, Section III, at 2, col. 3.

Some of the most careful scholars have even suggested that in addition to being inviolable, copyrights should be perpetual.[595] This view is pariah even under the broad and diverse goals of competition policy. Structuralist regulators will intervene as long as market power and concentration are higher than 'accepted levels'. The source or reason for this deviation is irrelevant.[596] Regulators concerned with static and dynamic efficiency also see no reason why copyright law itself should be sufficient to immunise its owner from allegations of abuse without any consideration of the harm caused to efficiency.[597]

Copyright formalism fails to make a real attempt to determine the proper balance between the social benefits that stem from the creation of copyright content and the social cost of monopoly. [598] In overlooking this, it fails to keep a proper utilitarian balance between stakeholder interests, and is inconsistent with the theoretical justification for copyright law.[599] The right to recover investments and appropriate rewards should not be boundless, particularly in light of near negligible requirements for copyright grant under Singapore law.

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[595] W M Landes and R A Posner, *Indefinitely Renewable Copyright*, (2003) 70 U. Chi. L.Rev. 471, at p.475. ("All valuable resources, including copyrightable works, should be owned, in order to create incentives for their efficient exploitation and to avoid overuse.")

[596] See discussion in Chapter III, Part II.

[597] See discussion in Chapter III, Parts III and IV respectively.

[598] See Chapter I, Part II; See F M Scherer and D Ross, *Industrial Market Structure & Economic Performance*, 3rd ed., (USA Rand Mcnally, 1990) at p.660 (Discussing how misallocation of resources is a social harm of monopoly power).

[599] W W Fisher III, 'Reconstructing the Fair Use Doctrine', (1988) 101 Harv. L. Rev. 1659, at p.1687 ("[T]he elaborate combination of grants and reservations that comprise the Copyright Act is designed to advance the public welfare by rewarding creative intellectual effort sufficiently to encourage talented people to engage in it, while at the same time making the fruits of their genius accessible to as many people as possible as quickly and as cheaply as possible.").

2. *Copyright Altruism*

Commentators like Fredrich Hayek have taken an opposite view. They would argue that there is a greater need to prevent abuses of market power in digital copyright than real property:

> "It seems to be beyond doubt that in these fields a slavish application of the concept of property as it has been developed for material things has done a great deal to foster the growth of monopoly and that here drastic reforms may be required if competition is to be made to work."[600]

Taken together, the literature essentially advances two arguments. First, copyright owners will likely innovate even with lower access thresholds to their content. Hence, competitive markets may be achieved without sacrificing incentives inimical to the copyright grant. Second, copyright abuses harm consumers more than abuses of real property rights, and should therefore receive greater scrutiny.

(1) *No Link to Innovation*

There is some consensus that a direct positive correlation exists between profits, R&D and innovation.[601] The key question is how much reward is necessary to bring forward 'enough' innovation. According to Jessica Litman, the link between production and dissemination of copyright content and the degree of available copyright protection is equivocal. Citing Yahoo!, the second most popular Internet search engine as an example, she argued that the service

[600] F A Hayek, ''Free' Enterprise and Competitive Order,' in F A Hayek, *Individualism and Economic Order* (eds.) (Chicago: University of Chicago Press, 1962)
[601] OECD, *supra*, n.10, at p.1.

originated with a directory created by two Stanford graduate students who posted it on the University's Web server without any primary goal for commercial domination.[602] Indeed, she goes on to note that whenever an exception in copyright is discovered, a new technology grows up from it:

> "Conventional wisdom tells us that without incentives provided by copyright, entrepreneurs will refuse to invest in new technologies. History tells us that they do invest without paying attention to conventional wisdom. A variety of new technology flourished and became remunerative when people invested in producing and distributing them first, and sorted out how they were going to protect their intellectual property rights only after they had found their markets. By freeing content providers from well-established rules, a copyright shelter allows new players to enter the game. These entrants have no vested interest yet, and are therefore willing to take more risks in the hope of procuring one. They end up exploring different ways of charging for value."[603]

Mark Lemley builds on this argument from the perspective of positive externalities. He argues that the idea that the law should find a way to compensate for these positive externalities seems "faintly preposterous", since positive externalities are everywhere.[604] If the marginal cost of benefiting from a use is zero, prohibiting that use imposes unnecessary social costs. In a market economy, the law only require producers to make enough to cover their costs, including a

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[602] J Litman, *Digital Copyright*, (New York: Prometheus Books, 2001), at p. 175. (Also arguing that "player piano rolls became ubiquitous after courts rules that they did not infringe the copyright in underlying musical compositions. The videotape rental business swept the nation shielded from copyright liability by the first sale doctrine.")

[603] *Ibid*.

[604] M A Lemley, *supra*, n.20. Philip Areeda and Herbert Hovenkamp offer numerous examples of uncompensated positive externalities. They conclude that "free riding on the positive externalities created by others is everywhere, and society does little to eliminate it. P E Areeda *et al*, *Antitrust Law: An Analysis of Antitrust Principles and their Application*, Vol IIA, (Boston: Little Brown, 1995) ¶1613b, at 153. See also W Gordon, 'On Owning Information: Intellectual Property and the Restitutionary Impulse', (1992) 78 Va. L. Rev. 149, 167 ("A culture could not exist if all free riding were prohibited within it.").

reasonable profit.[605] Competition law should therefore preserve consumer surplus by favouring competition over copyright monopoly.[606]

These arguments, however, confuse *information* with *innovation*. Information is plentiful, and copyright laws are not directed towards increasing the quantity of information available. Instead, they are directed specifically toward developing new works based on information that would not be produced in the absence of exclusionary rights.[607] Rare and valuable intangible works of expression accorded property rights are likely to be most efficiently allocated through free market mechanisms provided by copyright. The fact that copyright content, once created, is capable of being produced cheaply is not in itself evidence of the general incompatibility of markets with copyright. Rather, it is precisely because of market failure due to the ease of free riding that digital copyright is designed to correct. Pioneering innovators in digital markets will emerge only if there are sufficient incentives for them to invent. By undermining *ex ante* incentives to innovate, this paradoxically results in less useful information than compared to an outcome respecting copyright monopolies. In sum, a low threshold of compulsory access to inherently scarce copyright content would destroy the utilitarian balance upon which the market system is based.

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[605] D D Friedman, *Law's Order: What Economics Has to Do with Law and Why It Matters*, (Princeton: Princeton University Press, 2000) at p.115 ("You will make something only if its value . . . is at least as great as the cost of making it.").

[606] R H Bork, *The Antitrust Paradox: A Policy at War with Itself* , 2nd edn, (Basic Books: New York, 1993) (Describing consumer welfare as the only proper goal of antitrust law). Richard Posner, by contrast, argues that total welfare is the right measure for antitrust. R A Posner, *Antitrust Law: An Economic Perspective*, 2nd ed. (Chicago: University of Chicago Press, 2001). Posner's approach seems right, but his total surplus measure is still consistent with the idea that consumer surplus is a good and not an evil to be rooted out.

[607] J Dratler, Jr., *Intellectual Property Law: Commercial, Creative, and Industrial Property* § 1.08 (New York: Law Journal Press, 2003).

(2) *Negative Interference*

When a car is sold, property rights are transferred absolutely. In contrast, copyright owners retain certain rights in transacted property that interferes with the freedom of those wishing to 'build on' the copyrighted work even after the owner has been duly paid its asking price.[608] A low threshold to copyright content is therefore necessary to counterbalance the owner's residual control. [609] This is more so in digital markets. Technological progress is a multi-phased, interactive process, often involving lead innovations with the follow-on innovator making its own, cumulative contribution.[610]

These objections suggest that there is a structural problem within copyright law, rather than that competition law should set a 'right' threshold. In this case, the argument should be for endogenous reform within copyright law, rather than a harsher application of competition law. To interfere with copyright exploitation on a frequent basis may fundamentally undermine the certainty integral to promoting creativity.[611] This means that the exercise of calibrating access should start at the

[608] L Bently and B Sherman, *Intellectual Property Law* (Oxford: Oxford University Press, 2001) at p.2. ("'A' purchases a book, thereby becoming the owner of the book and possesses legal title over it. She owns the paper, the cover and the printer's ink which are physical embodiments of the book. However, the text is protected by copyright as a literary work, and remains with the publisher or author of the book. 'A' can do certain things, such as reading the book, selling it, or even destroying it. Yet she cannot make a copy of the book or translate it into a foreign language because these acts are controlled by copyright.")

[609] S C Salop and R C Romaine, 'Preserving Monopoly: Economic Analysis, Legal Standards, and Microsoft', (1999) 7 Geo. Mason L. Rev. 617 at p.664. ("[A] market is driven more by innovation than price competition, then entrants also must have an open environment to challenge the monopoly. An overly permissive antitrust regime may reduce aggregate innovation, as innovation by entrants by potential new entrants and small competitors is reduced by more than innovation by the monopolist increases.")

[610] See discussion in Chapter I, Part II.D.2.

[611] A Narciso, 'IMS Health or the Question Whether Intellectual Property Still Deserves a Specific Approach in a Free Market Economy' (2003) IPQ., 4, 445-468

real property rights, and adjusted upwards due to the ease of misappropriation by free riders without reaching the level under copyright formalism.

3. *Copyright Compromise*

The final view of copyright seeks a compromise between the polar extremes of formalism and altruism. On one hand, it recognises that copyright deserves more deference from competition law because unlike real property, it is only available if eligibility requirements are overcome, and they are only available for a limited time.[612] To apply competition rules requiring reasonable access during this period may likely erode the strength of the monopoly right that induced the owner to provide its content in the first place.[613] It recognises that a low threshold will make it easier and less costly for rivals and other complainants to accuse the owner of abusing its copyright. This will in turn reduce the owner's incentive to risk often enormous investments in time and R&D capital to offer and develop their products. Consequently, access to copyright content should be granted on much narrower grounds than the granting of access to tangible goods. However, where exploitation causes negative externalities or harms competition in markets where no protection is warranted, courts may be infer that the copyright was used for an ulterior motive. This view is predominant in the US. [614]

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[612] Although with the continued extension of copyright duration, the latter justification seems weak.

[613] C Stothers, 'The End of Exclusivity? Abuse of Intellectual Property Rights in the E.U.', (2002) 24 EIPR 86 at p.91.

[614] According to Robert Pitofsky, "A cautious approach is called [for the application of antitrust laws to high-tech industries]. But abandoning antitrust principles in this growing and increasingly important sector of the economy seems like the wrong direction to go." R Pitofsky, 'Challenges of the New Economy: Issues at the Intersection of Antitrust and Intellectual Property', available at http:// www.ftc.gov/speeches/pitofsky/000615speech.htm; *Image Tech. Services, Inc* v. *Eastman Kodak Co.* [1997] 125 F.3d 1195, 2 Trade Cases P 71,908 (*Kodak III*), *supra*, n.2 at 1211.

A copyright compromise offers the most principled approach under the PRA, and provides a critical understanding of the proprietary nature of copyright. However, in its present state, the PRA only offers vague range of a 'correct' balance that lies between the chasm of formalism and altruism. Neither case law nor independent economic analysis has articulated workable quantitative or qualitative criteria to calibrate correctly the incentives to induce an optimal amount of innovation. What the PRA has done, however, is to provide a foundation for those adopting the SSMA to attempt to calibrate the scope of copyright, and for those applying the CBA to attempt to measure the socio-economic costs and benefits of the owner's refusal.

III. THE SPECIFIC SUBJECT MATTER APPROACH

The SSMA is perhaps most famously attributed to *Volvo v. Veng*, where ECJ held "the right of a proprietor of a protected design to prevent third parties from manufacturing and selling or importing, without its consent, products incorporating the design constitutes the very *subject-matter of his exclusive right*."[615] Similarly, in the US case of *Townshend v. Rockwell*, it was held that:

> "Any party who has secured proprietary rights to such technology possesses the legal right to exclude others from practicing technology which has been protected. The adoption of an industry standard incorporating such proprietary technology does not confer any power to exclude that *exceeds the exclusionary power to which a patent holder is otherwise logically … entitled*."[616]

[615] [1988] ECR 6211, at 6235. (Emphasis mine)

[616] *Townshend v. Rockwell*, [2001] Trade Cas. (CCH) ¶ 72,890, at para.12. (Emphasis mine) The earliest application of theories emphasising the scope of protection in IP is found in US patent misuse cases: e.g. *International Salt Co. v. US* [1947] 332 US 392 ("the possession of a valid patent does not give the patentee any exemption from the provisions of the Sherman Act *beyond the limits of the patent monopoly*.'). (Emphasis mine)

Developing on the PRA, the SSMA rests on the concept that copyright grant includes certain rights within its scope similar to a fee simple grant. Under the SSMA, when anticompetitive abuse is alleged, courts will refer to the statutory scope of the particular IPR according to its scope, length, and subject matter to determine its permissible impact on the competitive process. In doing so, it recognises that the complex rules balancing access and incentives cannot be satisfactorily fashioned from the vagaries of competition litigation alone.[617] There are two primary strengths to the SSMA. First, by calibrating access based on pre-existing copyright rules, it provides a principled approach easily understood by practitioners. Second, the SSMA gives explicit recognition to national obligations under IP conventions and treaties.[618]

A. *Calibrating Competition Remedies under Copyright Rules*

The SSMA calibrates access to copyright content under competition law according to specific potential for copyright abuse to harm consumer welfare. Competition law is circumscribed because copyright limits the duration of protection and allows non-literal infringements to balance the potential conflict between imitation and innovation. While owners can use their copyright to oppose

[617] W R Cornish and D Llewellyn, *supra*, n.18 at p.18. (Arguing that "judges cannot, or should not work out the implications of statutory directives for themselves.")

[618] The most important international influence on the development of copyright has been the Berne Convention on the Protection of Literary and Artistic Works. Signatory states are obligated to provide minimum standards of protection to copyright owners and authors. Of these, the right to reproduce the work (Article 9) and the moral rights (Article 6*bis*) of attribution and integrity are most important to refusals to license. In recognition of the public need to be able to use works without payment, there is limited scope for Member States to create exceptions. In relation to the reproduction right, these exceptions must satisfy the 'three-step test': (1) all exceptions must be limited to special cases (2) not conflict with the normal exploitation of the work (3) not unreasonably prejudice the legitimate interests of the author. (Article 13) Compulsory licenses are allowed, but these must be *de minimis*. (Article 10.2) (use by way of illustration in publications for teaching) and Article 10bis (use for reporting current events).

imitations, it is illegal to extend that exclusive right outside its pre-defined scope. This provides a principled approach, since each type of IPR calls for a different balance of public and private interests. [619] It accepts that the extent competition law may intervene depends on the nature of the IPR. For example, in *Microsoft (EU)*, the CFI recognised that the EFD affects IPRs to different degrees. In the case of patents and copyrights, they expedite the process of being able to replicate the IP in the time and effort required respectively. However, because the value of trade secrets lies in its secrecy, the EFD has the potential for great harm in requiring even parts to be disclosed and be used.[620] Accordingly, the threshold for access was higher in the latter case.

The SSMA also goes some way to reconciling seemingly inconsistent approaches. It will be remembered in *Kodak* and *Xerox* arrived at diametric outcomes on similar facts.[621] Under SSMA, it could be explained by the fact that in *Xerox*, unlike in *Kodak*, the defendant was competing with the complainant in the primary market, and were infringing its IPRs. Since primary market rivals threaten the utilitarian dues of the owner, refusals to license are justified even where the owner is unable to meet market demand fully.[622] Consequently the 'pretextual' inquiry is irrelevant, since the need to protect innovations covering those parts fell within the owner's SSM and were justified the *per se* refusal.

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[619] W A W Neilson, 'Intellectual Property Rights and Competition Law and Policy: Attempts in Canada and Japan to Achieve Reconciliation', (2002) Washington University Global Studies Law Review Vol 1 405.
[620] *Microsoft (EU)*, *supra*, n.1
[621] Chapter II, Part IV.
[622] P Samuelson *et al*, 'A Manifesto Concerning the Legal Protection of Computer Programs' (1994) 94 Columbia Law Review 2308, at p.2418.

Similarly, in *Volvo*, the complaint concerned design rights over spare parts. Refusing the license independent dealers was justified in order to protect the subject matter of the owner's rights, since Volvo's ability to exploit the spare parts market was the only practical manifestation of its design rights.[623] In contrast, in *Magill*, an extended form of copyright not similarly found in other Member States protected information in the form of television listings.[624] Commentators have noted that there was a general reticence to upset the idea-expression dichotomy, allowing later creators to build on the ideas of those who had shared and been duly rewarded for their contribution to society's intellectual storehouse.[625] In response, the European courts at each level held that refusal to grant access to the listings was an abuse of the dominance gained through ownership of copyright in the listings. Thus, the subject matter immune to the interference of competition law is a fluid concept whose scope shrinks proportionate to the amount of mischief it may cause to rivals in the same market or some later point of production. Yet, there are good reasons counselling against liberal application of the SSMA.

First, closer scrutiny reveals that the conceptual certainty offered by the SSMA may be a thin one. The law's ability to calibrate copyright may have improved since the seminal case of *Donaldson v. Beckett* nearly 300 years ago.[626] However, it has yet to indicate conclusively where the line between private and

[623] *Volvo*, *supra*, n.46. ([A]n obligation imposed upon the proprietor of a protected design to grant to third parties, even in return for a reasonable royalty, a licence for the supply of products incorporating the design would lead to the proprietor thereof being deprived of the substance of his exclusive right, and . . . refusal to grant such a licence cannot in itself constitute an abuse of a dominant position.") at 6235.
[624] *RTE v. Commission (Magill)* [1995] ECR I-743.
[625] I Forrester, 'EC Competition Law as a Limitation on the Use of IP Rights in Europe: Is there a Reason to Panic?', Eighth Annual EU Competition Law and Policy Workshop, The Robert Schuman Centre for Advanced Studies, European University Institute, 6-7 June 2003
[626] [1774] 2 Bro. PC 129, 4 Burr. 2408

public rights should be drawn. Rather, cases seem to suggest that there is no single correct answer.[627] In the network economy, it is often difficult to identify primary and secondary markets due to the interdependency of companies and the tendency to for simultaneous competition in several markets. Market segmentation should therefore be less of an issue. Instead, the key question is whether the owner controls an asset that unjustifiably prevents rivals from making the same integrative function. A further distinction should be made between copyright that protects the core of the technology and those ancillary to it. Clearly, the owner's right to exclude others is greater in the former than the latter. This factor was considered relevant by the appeals court in *Microsoft (US)*, when it considered the quality of the combined functionality compared to individual sale of the parts.[628]

Even if each relevant market consistent to the scope of the subject matter could be accurately delineated, the intrigue only develops further. Competition law has never *exempted* primary market exercise of copyright from competition law scrutiny.[629] In *Volvo*, the Court held that a refusal to license could under certain circumstances, constitute an abuse of a dominant position, although such conditions were not present in the instant action. [630] Thus understood, the SSMA does not guarantee immunity even within the protected subject matter of copyright, but merely functions as a starting point for the analysis.

Second, if copyright over digital interfaces is less worthy of protection than patents over similar subject matter, it is not clear what rules of identification

[627] Chapter I, Part III.
[628] *Microsoft*, *supra*, n. 1 at para 348.
[629] C Bellamy and G Child, *European Community Law of Competition*, PM Roth ed, 5th edn (London: Sweet & Maxwell, 2001) at p.644.
[630] *Volvo*, supra, n.46. at 136.

operate to distinguish them. The problem is further complicated by the fact that the SSMA needs to take into account other means by which copyright owners enforce their rights. The stronger the ability to prevent access, thus preserving market power, the lower the threshold for access should be. Shrink-wrap contractual agreements and technological protection measures discussed in Chapter I all become relevant in this calibration, and act to lower access thresholds. However, awareness of their relevance is wholly different from being able to weigh to their significance. Ultimately, the concept of "scope of copyright" is an arbitrary one. While using copyright's scope is conceptually certain, the point at which the line is drawn within or between markets remains uncertain.[631] Even within the supposedly immutable scope, courts in the EU and US have been unwilling to grant owners a *carte blanche*. This missing step in the SSMA makes it hard – perhaps even impossible – to ever calibrate access properly.[632]

B. *The International Dimension of the Interface*

Digital copyright is sanctioned under national law and international treaties. Under the SSMA, competition law would be only allowed to interfere in the limited circumstances set out in them. Indeed, defendants in EU cases have pleaded compulsory licensing under Article 82 would breach the EU's obligations under the Berne Convention and TRIPS.

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[631] J B Kobak, Jr., 'Antitrust Treatment of Refusals to License Intellectual Property', (1999) 566 PLI/Pat 517 at 534; (Arguing that the specific subject matter approach does not respond satisfactorily where the practice is within the scope of the intellectual property right but also has an impact on secondary markets. This may happen where compatibility is denied, or fragmentation of a standard results.); W J Bowman Jr., *Patent and Antitrust law: A Legal and Economic Appraisal* (University of Chicago Press: Chicago, 1973), at pp.8-9. (Discussing the problem of distinguishing lawful output restrictions from unlawful restrictions merely on the basis of the patent grant.)

[632] M J Radin, 'Regime Change in Intellectual Property: Superseding the Law of the State With the "Law" of the Firm' Working paper 2004 (On file with author).

In *Magill*, the defendants argued that copyright went beyond the right to attribution and appropriability. The compulsory licensing order would eviscerate the owner's right of exclusive reproduction and moral rights, thereby conflicting with the normal exploitation of copyright in the programme listings and seriously prejudice its legitimate interests required under Berne.[633] In *Microsoft (EU)*, Microsoft raised Berne as a shield, this time under three heads. [634] First, Microsoft argued that compulsory licensing deprived it of exclusive control over access to its communication protocols.[635] Second, access would result in parasitic and therefore infringing work.[636] Regrettably, these arguments were never directly dealt with. Neither the CFI nor the ECJ bothered to address the effect of Berne in *Magill*, simply stating the EU was not a party to Berne, and therefore was not bound by it in applying Article 82.[637] The CFI in *Microsoft (EU)* held the plea was not "expanded in such a way that the President can make a proper ruling on it".[638]

However, the issue remains a live one, particularly for Singapore. Concern for international comity is evinced by Section 48 of the Singapore Competition Act 2004, which exempts conduct falling within the Third Schedule from being

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[633] *Magill*, supra, n.55 at paras. 41 and 72.
[634] *Microsoft(EU)*, *supra* n.2. Specifically, the European Court of First Instance had to consider whether granting compulsory licenses of Microsoft's communication protocols in its operating system would violate the EU's obligations under Articles 13, 31 and 39 of TRIPS (*ibid*, at paragraph 160), its obligations under the Berne Convention, as well as the preamble and Article 1(1) of the EC Directive on Computer Programs 91/250/EEC of 14 May 1991 (OJ 1991 L 122, p. 42).
[635] *Ibid*, at 119. ("The Commission cannot therefore recognise that the specifications for Microsoft's communications protocols are protected by copyright and at the same time maintain that the requirement imposed on Microsoft by the Decision to license those specifications does not infringe the very substance of that right.")
[636] *Microsoft(EU)*, *ibid*, at 120. ("That exclusive right to authorise the creation of derivative works is infringed, since the implementation of the specifications for Microsoft's communications protocols by its competitors would almost certainly be an adaptation, or a translation, of those specifications which would fall within the ambit of copyright and could therefore not be regarded as a work developed independently.")
[637] *Magill*, supra, n.55 at 73.
[638] *Microsoft(EU)*, *supra*, n.2 at 210.

subject to scrutiny under Section 47. Of particular interest are Sections 3(4)[639] and 4(4)[640] that allow the Minister to exercise his discretion to exempt where conflicts with international obligations and public policy arise. Further, given the permeability of international trade, national courts will be anxious not to order compulsory access where this clearly derogates from national obligations, knowing that a *quid pro quo* may lie in the not too distant future for its own undertakings doing business abroad. Even if both undertakings are local, the fact that they are dominant *and* in the very portable business of digital rights means that disgruntled undertakings can easily seek friendlier shores elsewhere to the detriment of the local economy.

The difficulty lies in determining the boundaries of 'fair' competition and the qualifications necessary to balance the rights and interest of copyright owners on one hand, and users and the public on the other hand.[641] This is consistent with the utilitarian justifications for copyright. While Berne is largely silent on the issue of anticompetitive abuse, TRIPS merely acknowledges the problem of balancing IP with competition policy and avoids setting specific standards to govern the Interface.[642] The general principle underlying TRIPS is that members may adopt measures necessary to promote the "public interest in sectors of vital importance to their socio-economic and technological development", including

[639] See Annex A. It is also worth noting that Sections 3(5) and 4(5) allows the Minister to immunise conduct otherwise falling under section 47 *ab initio*, though the reasons for this and its implications are not immediately clear.
[640] See Annex A.
[641] Article 7 expresses this need: "The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations."
[642] For example, the preamble of TRIPS recognises "the need to promote effective and adequate protection of IP rights, and to ensure that measures and procedures to enforce IP rights do not themselves become barriers to legitimate trade." H Ullrich, 'TRIPS: Adequate Competition, Inadequate Trade, Adequate Competition Policy', (1995) 4 Pac. Rim. L & Poly. J. 153 at 155.

those needed to "prevent the abuse of intellectual property rights by right holders." [643] This is consistent with the dynamic efficiency goals of competition policy. Significantly, these measures must be "consistent with the provisions" of TRIPS. Exceptions or limitations are allowed only in "certain cases which do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the right holder."[644]

There is no worldwide consensus on the parameters of what constitutes an 'abuse' under national law.[645] TRIPS contains more specific provisions that flesh out the concept of "abuse".[646] Members may adopt legislation to "prevent or control" licensing practices "which constitute an abuse of intellectual property rights having an adverse effect on competition in the relevant market."[647] In the context of patents, this may include "limited exceptions to the exclusive rights conferred by a patent" that "do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties".[648] The detailed nature of these "exceptions" establishes a dual regime for assessing compulsory patent licensing practices. On one hand, it distinguishes between compulsory licenses granted to remedy anticompetitive practices, and all other practices on the other.[649] These exceptions suggest that instances where IPR

[643] *Ibid*, Article 8.
[644] *Ibid*, Article 13.
[645] H Hovenkamp *et al*, *IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property* (New York: Aspen Law, 2003) at §40.2c2.
[646] It may be suggested that consistent with the principle of harmonious interpretation, Article 8 should be understood as "essentially a policy statement that explains the rationales taken under Articles 30, 31 and 40" rather than a basis of broad exceptions from the TRIPS minimum substantive standards. Prima facie, it is clear that tension between the broad language of Article 8 and the focused language of Article 40(2) should be resolved in favour of the former.
[647] *Supra*, n.23.
[648] *Ibid*, Article 30.
[649] Thus, in Singapore, the Patents Act provides for licences of right where demand for a patented product are not met; the working or efficient working of another patented product which makes a

owners are found to abuse their rights should be specific, well-defined and exceptional. While it provides for several conditions that apply to grant of compulsory patent licenses, it does not assist in establishing any useful understanding of when such licenses should be granted. The fluid language in TRIPS thus establishes a relatively unconstrained regime that would allow WTO members to enact broad abuse measures and claim substantial compliance with TRIPS obligations.[650]

Recognition of international obligations makes the SSMA conceptually desirable. However, it provides little real benefit to parties in terms of certainty or applicability. Assuming that some clear direction could be teased out of the ambiguous wording in TRIPS or Berne, competition law will not excuse the defendant's conduct because of a possible, even likely breach of international obligations. Private parties have no *locus standi* to enforce international obligations. [651] As contract law teaches, only the parties to the agreement may complain of breach of its terms.[652] Just as the proper charge is failure for the signatory state to give effect to its obligations under the instrument, the proper complainant is another signatory state to the relevant international tribunal. As the

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substantial contribution to the art is prevented or hindered; the establishment or development of commercial or industrial commercial activities prejudiced or by reason of conditions imposed by the proprietor of the patent on the grant of license under the patent or the use or disposal of the product; or where industrial activities in Singapore are unfairly prejudiced. See *supra*, n.11.

[650] In particular, Article 8(2) explicitly provides for restricting abuse of IP rights that "restrain or adversely affect the international transfer of technology. *Ibid*. R H Marschall, 'Note, Patents, Antitrust, and the WTO/ GATT: Using TRIPS as a vehicle for Antitrust Harmonisation', (1997) 28 Law & Poly. Intl. Bus. 1165. (Arguing that Article 8(2) leaves so much room for departure from more specific provisions like Article 31's limitations on compulsory licensing as to be unworkable); J H Reichmann, (1997) 29 NYU J. Intl. L. & Pol. 11 at 52-58. (Discussing ways in which TRIPS leaves "wiggle room" for aggressive national approaches to antitrust regulation of IP rights)

[651] *Lenzing AG's European Patent (UK)* [1997] RPC 245. W R Cornish and D Llewellyn, *supra*, n.18 at 11-37. ("(TRIPS) does not furnish grounds which can be raised in the course of private litigation… judges, in other words, are not to be furnished with any general tool for criticising the scope of legislation.")

[652] G H Treitel, *Treitel on the Law of Contract*, (London: Sweet & Maxwell, 2003).

US-Singapore FTA clearly shows, the trend is on for TRIPS-plus rights, particularly as collateral for other trade concessions. Strong copyright promote market confidence and attract direct foreign investments.[653] Further emphasis on the SSMA alone would only serve to put competition law further at odds with copyright law in member states.

Perhaps more fundamentally, the SSMA does not accurately reflect commercial reality. By giving due regard to the full scope of the statutory rights granted by copyright law, it may overcompensate owners, since they receive more than required to induce innovation under the utilitarian balance. Few copyright owners calculate more than a few years in planning the exploitation of their rights.[654] Certainly, there can be no justification for perpetual market power, however great the innovation, if only because time distant returns have relatively little effect on present investment incentives. The quest for a 'specific subject matter' has therefore been criticised as being inconsistent with the competition law framework of analysis. [655] The SSMA differs from an analysis under Singapore competition law, which turns exclusively on consumer welfare-driven goals.[656] Indeed, while some commentators argue for stronger regulation and others for little or no regulation by competition authorities, they all agree that a more thorough economic treatment of the interface is needed.[657] If competition

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[653] See Chapter I, p. XX.
[654] J Litman, *supra*, n. 33 at p.19.
[655] I Govaere, *The Use and Abuse of Intellectual Property Rights in EC Law* (London, Sweet & Maxwell. 1996)
[656] V Balakrishnan, Singapore Parliamentary Debates, 19 October 2004 http://www.parliament.gov.sg/reports/public/hansard/title/20041019/20041019_S0004_T0006.html ("Market competition spurs firms to be more efficient, innovative, and responsive to consumer needs. Consumers would enjoy more choices, lower prices, and better products and services.")
[657] D Ravicher and S Dilldoff, 'Antitrust Scrutiny of Intellectual Property Exploitation: It Just Don't Make No Kind of Sense' (2003) 8 Sw. J.L. & Trade Am. 83, S Semeraro, 'Regulating Information Platforms: The Convergence To Antitrust' (2002) 1 J. Telecomm. & High Tech. L.

law is to promote commercial certainty, then it needs to move beyond the SSMA towards justifying non-interference, and explicitly take into account economic analysis inimical to competition law.

IV. THE COST-BENEFIT ANALYSIS APPROACH

The CBA offers perhaps the most sophisticated means of determining whether compulsory licensing is appropriate under competition law. Firmly rooted in economic theory, it eschews the simplistic PRA and vagueness of the SSMA. On one hand, it balances the cost and benefits of copyright exploitation. On the other, it takes into account the utilitarian bargain in copyright policy and dynamic efficiency considerations of competition policy.[658] The Guidelines hint that the CBA will be the approach Singapore will embrace:

> "While there is no provision for exemptions under the section 47 prohibition, the CCS will adopt an approach known as objective justification. *The CCS will take into account both the anticompetitive and any countervailing benefits when assessing the effects of a particular conduct.* When the dominant undertaking can show that the conduct leads to improvements in economic efficiency and the benefits could not be achieved without producing such anti-competitive effects, the CCS will not find abuse. However, any restriction of competition would need to be proportionate to the benefits produced."[659]

143; Michael A. Carrier, 'Resolving the patent-antitrust paradox through tripartite innovation', [2003] 56 Vand. L. Rev. 1047, E Beister III, 'Ground rules and hot topics in antitrust and intellectual property' (2004) JUN N.J. Law. 18, A M Wolman and D Balto, 'Intellectual Property and Antitrust: General principles' (2003) 43 IDEA 395

[658] In economic terms, the private value of information goods is the difference between the revenue generated and the costs incurred. This is weighed against the costs and benefits to competitors and consumers F Machlup, 'An Economic Review of the Patent System', Study No. 15 Subcommittee of the Judiciary of the US Senate (Washington, 1958) at 57-58.

[659] Competition Commission of Singapore (CCS) Draft Guidelines on the Section 47 Prohibition (Draft Guidelines), para. 4.6 available at : http://www.ccs.gov.sg/Doc/GuidelinesConsultation/Abuse_of_Dominant_Position29032005.pdf. (Emphasis mine)

Similar approaches are taken under in US under the label of a 'rule of reason' approach,[660] while in the EU it is considered as an objective justification.[661] The CBA has gained popularity amongst courts and regulators. It is increasingly used to support the claim that policymakers have established the utilitarian balance.[662] Essentially, within the limits of the scope and duration of rights granted, the copyright owner should be able to maximise its profits unrestricted in order to make the most efficient use of right to achieve the greatest social benefit. At the core of the CBA, lie two elements. First, developing on the PRA and SSMA, the court essentially attempts to measure the externalities of exercising the copyright beyond its subject matter. Second, it applies economic analysis to select practices that it believes best balance copyright and competition goals.

A. *Balancing the Figures: Missing the Point?*

CBA approves refusals to license as long as the benefit of doing so exceeds the costs incurred. The intuition is that it is in society's interest to maximise any incentive or creative output, as long as it exceeds its social value.[663] This is appealing from the perspective of copyright policy. The analysis is identical: whether the proprietary rights conferred to the private creator over

[660] *Kodak III*, *supra*, n. 48.
[661] R C Lind and Paul Muysert, 'The European Commission's Draft Technology Transfer Block Exemption Regulation and Guidelines: A Significant Departure form Accepted Competition Policy Principles', [2004] 4 ECLR 181 at 185. ("The Commission's staff made it very clear that their preferred method of applying EU competition law … would be to *weigh the competitive gains that would weaken or eliminate IP protection … against the potential costs that this weakening of the IP rights would engender by reducing investment incentives*") (Emphasis mine)
[662] *Standard Oil v. United States*, [1911] 221 US 1; *United States v. Aluminium Co. of America*, [1945] 148 F 2d 416 (2 Cir)
[663] Social costs are typically identified as losses imposed through higher prices, reduced output and slowing down of innovation F M Scherer, *supra*, n.29, at pp.450-454.

information achieves greater socio-economic benefits when considered against the wider public interest.[664] However, placing normative weights on the cost and benefits of copyright exploitation has three critical drawbacks.

First, the only requirement for access is that costs to society are greater than the benefit to the owner. This eschews the notion of 'copyright immutability' based on the SSMA, and in doing so, may unwittingly sanction a form of 'copyright communism'. Thus under the CBA, judges may order compulsory licensing even where rivals seek only competition by imitation, and even where the product is already being provided for by the copyright owner, since no there is no obligation to consider these factors decisive in themselves. It is an extreme view; but not an improbable one - and is of very contemporary vintage.[665] Of course, the corollary is true: if the benefits exceed the costs, then even if the copyright owner exercises its rights in a way that exceeds the statutory grant under copyright law, or if copyright law continues its untrammelled conferment of strong rights so that the extent exercise nonetheless remains within its scope, the refusal will be inviolable. Danger of either is particularly real in digital markets where product design and copyrights are interwoven in a complex net of costs and

[664] S Ricketson, 'New Wine into Old Bottle: Technological Change and Intellectual Property Rights', [1992] Prometheus Vol. 10 No. 1, at p.61. This approach also prohibits practices that distort resource allocation in areas not covered by copyright, and it has also gained currency with classical Chicago theorists. N. Gallini and M. Trebilcock, 'Intellectual Property Rights and Competition Policy: A Framework for the Analysis of Economic and Legal Issues', in R Anderson and N Gallini (eds), *Competition Policy and Intellectual Property Rights in the Knowledge-Based Economy* (Calgary: University of Calgary Press, 1998)

[665] J Drexl, 'IMS Health and Trinko- Antitrust Placebo for Consumers Instead of Sound Economics in Refusal-to-Deal Cases' (2004) IIC Vol. 35 788 at p.797 (Advocating access to IMS Health's database because "being aware of the lock-in effect, does not have to fear that a superior method of collecting data will enter the market" (at p. 804) and Verizon's telecommunications facilities because "no one would seriously expect high quality telecommunications service from such a monopolistic structure.")

benefits, and judicial deference is most likely.[666]

Second, have courts been largely unsuccessful in developing a workable mechanism to determine if the refusal was justified. In cases involving leveraging allegation, this failure is particularly pronounced. [667]Given that the court has successfully identified monopoly power in the upstream market, and diminution of competition downstream, it is faced with the difficult task of proving a causal link between the two findings. Economic theory is clear that there is no reason why a monopolist of one product would want to monopolise its own complementary product, since it cannot benefit from a monopoly profit. Consumer exploitation is unlikely, since the copyright owner only has captive customers in the short run. The owner who exploits its monopoly over the downstream market will find himself without many customers of his upstream equipment in the next period. Costs to the owner's reputation would likely deter exploitative behaviour, since it would be unlikely to have any customers, and would make new entry attractive. There is also no need to worry about the loss of efficiency from destruction of more efficient secondary market sellers. If they were more efficient, the owner would simply contract with them rather than replace them. Even if the owner may succeed in locking consumers into the downstream market, if it does not also offer a competitive upstream market product, it will lose market share at both levels. Apple was recently reported to refuse rivals of downstream portable

[666] In *Microsoft (US)*,*supra* n.2, the District of Columbia Circuit Court declined to find Microsoft liable for tying its Internet browser to its Windows operating system, pointing out that since courts have limited competence in evaluating high technology product designs, they should be "wary of second-guessing the claimed benefits of a particular design decision".

[667] R C. Lind and P Muysert, *supra*, n 92 at p. 185. ("However, what became clear in our discussion with the Commission was that, in assessing the incentive effects, the Commission have already succumbed to the aforementioned bias and were giving little or no weight in their analysis to the long-run incentive effects upon future new product development and commercialisation.")

media players access to interface information needed to download music from its upstream music server. However, alternative music formats such as .MP3 and .WMA were quickly made available and music devices have begun to be developed for such formats.[668] Self-correcting and durable monopolies must therefore be distinguished from inefficient ones, and competition regulation confined to the latter.

Third, the CBA focuses on promoting *ex ante* competition at the expense of *ex post* competition. In *Aspen Skiing*, the dispute was over the division of monopoly profits.[669] Jointly, rivals and the owner monopolised skiing in Aspen, and whether the defendant, who needed the sharing agreement less because it could offer more variety to skiers than the plaintiffs got two-third, or nine-tenths of the profits the agreement was irrelevant so far as the price and output of skiing were concerned.[670] Thus compulsory access to essential facilities merely allows rivals to share the dominant position enjoyed by the owner rather than protecting the public, and amounts to little more than a duty to divide monopoly profits. It is simple enough to state that the EFD should not be invoked in situations where mandating access would not address a competitive problem or would produce harmful results. If the essential facility is a unique input, the economic effects of mandated access may be positive but are extremely difficult to determine, and such a determination certainly is beyond the capability of the courts.

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[668] T Smith, 'Digital music download coin-op to offer 'all formats, all DRMs', http://www.theregister.co.uk/2004/11/19/inspired_music_vending

[669] *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, [1985] 472 U.S. 585, 605 n. 32, 105 S.Ct. 2847, 86 L.Ed.2d 467

[670] D W Carlton, 'A General Analysis of Refusal to Deal- Why Aspen and Kodak are Misguided' *NBER Working Paper No. W8105* available at: *http://papers.ssrn.com/sol3/papers.cfm?abstract_id=258504*

B. *Regulating Abuse or Picking Winners?*

The CBA provides a useful guide for courts to choose the permutation of refusals to license which least restrict competition. Competition law responds to fears that private ordering might unduly encroach on intellectual commons for independent innovation or that it might transform the process of appropriating knowledge into actual control of markets.[671] The major goal here is to safeguard the incentive and reward rationales of copyright protection while at the same time controlling the risks of an undue extension of legal monopoly. [672] As a theory, the CBA is unassailable on this point; the problem lies in its useful dissection by economists, and application by judges.

1. *The Problem with Economic Theory*

Judges need a theory to help decipher the facts, yet the law cannot settle on one. They may rely on neoclassical microeconomics to explain common practices such as cartels and mergers, but this is not where the action is in interface litigation. Forces that induce litigants to settle ensure that cases that are more problematic dominate litigation, and usually come to court before there is any clear economic theory. This lacuna is exacerbated for three reasons.

[671] M D Janis, 'Minimal Standards for the Patent/Antitrust Interface under TRIPS, in *International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime* (Cambridge University Press: Cambridge, 2004)

[672] In the economic behaviour of parties other than the rights holder- the hall mark of the utilitarian justification in IP law. W F Baxter, 'Legal Restrictions on Exploitation of the Patent Monopoly: An Economic Analysis' (1996) 76 Yale Law Journal 267, at p.355.

First, information needed to apply competition rules are given by self-interested parties. There are few competent experts, and almost all of them are employed by, or have other financial ties to firms involved in, or will be potentially affected by the litigation. Few competition regulators employ computer scientists or info-communications experts, and most are wholly dependent on economic and legal consultants. It is difficult to find a consultant who is both competent and disinterested. The more technical the area of litigation, the fewer disinterested experts there will be. It is therefore less likely to work. To learn anything valuable about digital markets, economists must collect facts, formulate hypothesis about the effects that are likely if the conduct is abusive, use data to search for these effects and present the results to the scholarly community for critique and refinement or disproof.[673] Any competent economist can construct a model showing refusals to license harms consumer welfare under limited assumptions. Whether this holds is an empirical question that must be proved by data, if such data is available at all.[674] Parties do not collect data to test conflicting hypotheses about the conduct. Even assuming this data exists, the results are not 'truth' but merely possibilities that refusals are harmful or otherwise.[675] The consequences of awarding damages whenever bad decisions hurt investors would be frightening. Businesses often rely on financial incentives to encourage managers to make the best use of knowledge and weed out those who, despite their best efforts, cannot do as well as others. Because judges do not profit from making astute business decisions, and are not fired for making bad ones, it is hard

[673] F H. Easterbrook, 'Ignorance and Antitrust', in *Antitrust, Innovation and Competitiveness* (Thomas M. Jorde and David Teece, eds.) (New York: Oxford University Press, 1992) at p.122.
[674] R H Coase, *How should Economics choose?* (Chicago: University of Chicago Press, 1982) (Observing that theories often run ahead of data.)
[675] F H Easterbrook, *supra*, n. 103 at pp. 119-120.

to see why they should be allowed to make them under the guise of competition law.

Second, economics may often not be able to give a clear and definite answer on what will happen in a market, much less what it should. To the extent judges make economic decisions in antitrust cases; they are predicting the tomorrow's effects of today's practices. This is problematic under the best of circumstances. Economists start from existing practices and try to explain why refusals are anticompetitive. Even if they all agree with the effects, they may disagree about the impending effects under changed circumstances. Competition law theories are built on assumptions that do not cover all real world situations. When assumptions change, the outcomes of the models may look strikingly different. Social scientists use their models to improve the state of human understanding. Judges acting on these models impose fines and forbid conduct that may well be beneficial. The two are different businesses, not so easy to justify based on arguments made in litigation, however plausible they may seem. For example, different copyright markets require different levels of appropriability. This complicates the economic models set forth. The more sophisticated theories require courts to make distinctions among business practices that are difficult to make in a consistent manner and with a high degree of accuracy.[676] Whatever the arbitrary scope of rights conferred, there may be insufficient inducements to investment in R&D. Just as weak rights deter innovators of primary inventions, too strong rights penalise the incentives to derivative R&D. The copyright owner of digital standard may not be under competitive pressure to improve the

[676] K N Hylton, *Antitrust Law: Economic Theory and Common Law Evolution*, (Cambridge: Cambridge University Press, 2004) at p. 189.

technology. One possible solution conclusion is to grant wide copyright for a very short time, or narrow copyright forever.[677] However, this raises the empirical difficulty of determining what 'long' or 'short' mean. Another example is the theory on foreclosure in digital markets. Recent work refutes claims that innovation in digital markets will be stifled if third parties are not allowed to build on owner's content.[678] These studies suggest that whatever market power most IPRs provide is often eliminated by subsequent innovations or imitations. As Schumpeter suggested, innovations that develop the next generation of products represents the most important dimension of competition.[679] Economic theories positing the costs of refusals to license may therefore overestimate its impact. Digital copyright markets may be far more resilient than this view believes.[680]

However these effects may balance out, a legal standard that attempts to identify cases where the inducement of monopoly reward is necessary to stimulate innovation appears highly problematic. It is difficult to prove the link between monopolistic returns justified by copyright from eliminating rivals as an essential

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[677] Much of the literature is cited and summarized in N Gallini and M Trebilcock, *supra*, n. 95.

[678] In one study covering the electrical and chemical industries, Edwin Mansfield found that competitors managed to imitate 60% of all patented inventions within four years of their introduction. Another recent study of the former West German patent system found that 65 -95 % of patent owners did not file for renewals for the maximum number of years. In fact, the study found that most innovations became obsolete fairly quickly, within two to seven years. E Mansfield *et al*, 'Imitation Costs and Patents: An Empirical Study', (1981) Economic Journal Vol. 91 No. 364 pp.18-28.

[679] P Beutel, 'The Intersection of Antitrust and Intellectual Property Economics: A Schumpeterian View', in L Wu, ed, *Economics of Antitrust: New Issues, Questions, and Insights*, (New York: NERA Economic Consultants, 2004)

[680] Salop and Romaine have argued that liability standards should not be more permissive in high-technology industries. These economists state that when: "[A] market is driven more by innovation than price competition, then entrants also must have an open environment to challenge the monopoly. An overly permissive competition regime may reduce aggregate innovation, as innovation by entrants by potential new entrants and small competitors is reduced by more than innovation by the monopolist increases." R. C Romaine and S C Salop, 'Slap Their Wrist? Tie their Hands? Slice Them Into Pieces? Alternative Remedies for Monopolization in the Microsoft Case', (1999) 13 Antitrust 15, at pp.17-18

inducement for innovation.[681] Even if so justified, it may be asked how much market power is justified and over what time period. Finally, at what point, if ever, are rivals to have access such that competition can allow consumers to share more fully in the gain? Translation from economic theory to legal rules must reduce the costs of error and information, balancing the welfare losses from inefficient business conduct on one hand with the welfare losses from efficient business conduct condemned by legal rules and overall costs of operating the legal system for such inquiries. To be useful, economic analysis must do more than establish possibilities. It must establish the probability that the refusal subverts market competition. [682]

2. *Judicial Limitations*

Judges often deal with technical questions through technical experts presenting evidence, which the judge is then expected to assimilate into his legal analysis. In this regard, Richard Posner, a leading figure in the law and economics movement makes a significant admission: digital markets involve computer science and info-communications technology, and are considerably more difficult for judges to understand than the average body of scientific or engineering knowledge. [683] Similarly, the concern over limited judicial competence in

[681] J F Brodley, 'Post-Chicago Economics and Workable Legal Policy' (1995) 63 Antitrust LJ 683
[682] R A Cass and K A Hylton, 'Preserving Competition: Economic Analysis, Legal Standards, and Microsoft' in D S Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*, (Boston: Kluwer Academic Publishers, 2002) at p.433.
[683] R A Posner, "Antitrust in the New Economy" (2003) John M. Olin Law & Economics Working Paper No. 106.

assimilating economic theory necessary in competition analysis was echoed during the Parliamentary debate.[684]

Generally, courts prefer rules instead of complicated balancing tests. Judges do not hesitate to create rules of general application, but quail at the though of examining business decisions. For example, courts hearing professional negligence suits adopt custom rules shielding defendants from liability as long as he has complied with the custom of his profession.[685] Similarly, in regulating the relationships within and outside the company, company law has generally preferred to leave shareholders and directors to decide the proper boundaries of their own activity.[686] If a director breaches his duties towards the company, statutory action brought to remedy the breach based "unfair prejudice" is judged based on the company's constitution, and not what the judge may think is "unfair" generally. Similarly, courts look to breaches of procedure in fixing errant directors with liability, rather than questioning the business sensibility of a decision that results in harm to the company. These rules represent a recognition that erroneous decisions would result more frequently if judges defined the appropriate balance of conduct in each case.

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[684] Sin B A , Singapore Parliamentary Debates, 19 October 2004 http://www.parliament.gov.sg/reports/public/hansard/title/20041019/20041019_S0004_T0006.html ("*This raises a fundamental question as to whether the courts are indeed best qualified to undertake such determinations.* Judges are essentially lawyers who are trained in the analysis and application of the law. They are *neither economists nor financial experts who would readily comprehend the intricacies of the market place operations.* Questions on the meaning of a word within the Bill on competition would require a thorough analysis on not only the plain import of the word, but also the impact that the decision would have against the wider economy and society. Are judges, therefore, technically trained to undertake such technical analysis and review? Of course, it may be said that to overcome this limitation, judges may have the services of an *amicus curiae* or Friend of the Court in coming to a decision. *This does not however, leave one with the ideal position of having the best qualified person for the job*.") (Emphasis mine)

[685] W V H Roger, *Winfield and Jolowicz on Torts*,(London: Sweet & Maxwell, 2002)

[686] P Davis, Gower's Principles of Modern Company Law, 6th Edn, (London: Sweet & Maxwell, 2003)

Similarly in digital markets, Courts should not second guess market results which could be examples of the incumbent's superior skill, foresight and industry. Institutional error and error costs are closely related. In cases involving refusals to license, the competitive superiority of a rival product may be difficult to ascertain during proceedings.[687] Balancing the costs and benefits of an exclusionary conduct that also has efficiency considerations may well go beyond the capacity of the courts.[688] If the practice is employed widely in industries that resemble the copyright owner's but are competitive, there should be a presumption that the owner is entitled to use it as well. Its widespread use implies that it has significant economising properties, which implies that to forbid the owner to use it will drive up his costs and optimum monopoly price. The burden should be on the complainant to show that forbidding the use of the practice will, by increasing the rate of new entry, completely offset the effect of prohibiting the owner's conduct.[689] Just as Parliament did not intend judges to review business records to determine the reasonableness of prices, they surely do not intend for courts to interfere with output decisions as to whether or not to license.[690] As the Supreme Court in *Trinko* noted, to do otherwise would force courts to emulate public utility

[687] J A Ordover, 'Economic Foundations and Considerations in Protecting Industrial and Intellectual Property' (1985) 53 Antitrust L.J. 503.
[688] D Geradin, 'Limiting the Scope of Article 82 of the EC Treaty: What can the EU learn from the US Supreme Court's Judgement in *Trinko* in the wake of *Microsoft*, *IMS* and *Deustche Telekom*?' (2005) SSRN, at 3. ("While granting access to 'essential facilities' will stimulate competition in a secondary market (thereby contributing to allocative efficiency), it risks reducing the incentives for essential facility holders to invest. This issue also raises questions about the proper role of competition authorities and courts. Mandatory access involves complex price-related questions for which these institutions seem poorly equipped.")
[689] R A Posner, *Antitrust Law* , 2nd Edn, (Chicago: University of Chicago Press, 2001), at p.254.
[690] B Sher, 'The Last of Steam-Powered Trains: Modernising Article 82, [2004] 5 ECLR 243 at 246. ("An overly intrusive approach to refusal to supply can require the Commission, the national competition authority and the national courts to assume a price regulatory role for which they are neither trained nor equipped.")

regulators, which push judges beyond their areas of competence and the boundaries of authority under the competition laws.[691]

Error is nothing new to courts, and a realistic view must accept that it will occur. However, recognition of the potential for error requires a consideration of the relative costs of false convictions and false acquittals. When the conduct underlying refusals to license is procompetitive, lowering costs and prices in the long-run, the costs of false convictions can be large.[692] Over-deterrence in a particular case may have a spillover effect in the whole industry so that potential entrants or competitors also may be discouraged from committing resources to innovation. If those rewards are taken away, innovation will likely decline, and in the long-run consumers will suffer.[693] Regulatory actions that affect the returns of investors in a few successful companies can have a dramatic impact on the willingness of investors to fund similar companies in future.[694] The theory of

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[691] *Verizon Communications Inc. v. Law Offices of Cutris V. Trinko*, [2004] LLP 540 US 682. at p. 879. (Declining to adopt the role of "central planners" in deciding access pricing issues since " [e]ffective remediation of violations of regulatory sharing requirements will ordinarily require continuing supervision of a highly detailed decree.".) See also R A Cass and K A Hylton, 'Preserving Competition: Economic Analysis, Legal Standards, and Microsoft' in D S Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*, (Boston: Kluwer Academic Publishers, 2002) at p.445. ("Generally, antitrust courts have been reluctant to conduct … cost benefit balancing… because it pushes judges beyond their area of competence and requires courts to take on some of the functions of public utility regulators.")

[692] S C Salop and R C Romaine, 'Preserving Monopoly: Economic Analysis, Legal Standards, and Microsoft', (1999) 7 Geo. Mason L. Rev. 617 (Stating that Microsoft "may determine the course of computer software industry for the next ten or twenty years"); A F Pérez, 'DOJ's 'New' Competition Paradigm Resurrects Outdated Economics', (WLF Legal Backgrounder, Feb. 4, 2000). (Arguing that given that the cost for the computer industry of a wrong decision by the judiciary in the Microsoft case is likely to be high, the DOJ should have never brought the Microsoft case without additional policy guidance from the legislative branch.).

[693] F H Easterbrook, 'Predatory Strategies and Counterstrategies', (1981) 48 U.Chi.L.Rev.268. (Arguing that judicial scrutiny of new products for their possible predatory consequences may, according to some antitrust experts, stifle incentives for R&D investments in new and improved products and processes.)

[694] J Lerner, 'The Returns to Investment in Innovative Activities: An Overview and an Analysis of the Software Industry', in David S. Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*, (Boston: Kluwer Academic Publishers, 2002) at p. 479. (Citing the example of Comsat, whose stock prices fell by half in the year of antitrust intervention, leading to little new private investment in space-related industries.).

selecting winners provides no answers to this dilemma, only recognising that the connection between reward and incentive is complicated.[695] Because economists and courts do not fully understand the innovation process, they are unlikely to be able reliably to differentiate between pro-competitive and anti-competitive effects of conduct.[696]

V. EVALUATION

A unified approach to regulating refusals to license should build on the evolutionary trend from the PRA to the SSMA and finally on the CBA. A starting point to developing this approach would be to refine the CBA by more explicitly taking into account the proprietary nature of digital copyright and the scope of those rights conferred by copyright law. This would give courts a better idea how to calibrate the normative weights in defining costs and benefits. Once this is done, adopting an economic analysis in competition law is inevitable, given its goals in dynamic efficiency.

Here, courts can draw on the accumulated wisdom of the economic profession. Judges can examine theories, models, arguments, and studies subjected to through the years to professional testing by other economists. They should be mindful that even when built on this base, rules might be flawed. The danger is that courts may take an over-simplistic view of digital markets, where the environment is too unpredictable for this kind of presumption. If the size of

[695] D F Turner, 'The Patent System and Competitive Policy" (1969) 44 New York University Law Review, 450, at 459 ("One can rarely, if ever, calculate with any degree of precision the ultimate commercial value that will be gained.")
[696] M M Burtis and B H Kobayashi, 'Why an Original Can Be Better than a Copy: Intellectual Property, the Antitrust Refusal to Deal, and ISO Antitrust Litigation', (2001) 9 Sup. Ct. Econ. Rev. 143 at p.158.

the potential future market is big enough, there would be no real limitation of output and the only outcome would be that some participants would get bigger rewards than others would. However, getting a 'right' outcome from economic theory is much more likely than if courts start from scratch and attempt to determine this under the vacuous open-ended standards of Section 47.

CONCLUSIONS

I. GENERAL OBSERVATIONS

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time

T S Eliot[697]

A significant proportion of attempts to formulate a theory at the interface between IP and competition law have been misdirected or incomplete due to a misunderstanding of legal or economic issues.[698] It might, be unfair, however, to hold those involved responsible, as if they were somehow lackadaisical or incompetent. The fault may lie with the Interface itself for demanding the acquisition of an unusually high standard of cross-disciplinary competence with the speed with which digital copyright markets have evolved. Few judges and regulators have the time or opportunity to do this. The central purpose of this dissertation was therefore to highlight key errors at the Interface while acquainting readers with sufficient expertise in unfamiliar areas to rectify them.

The extent of protection given by copyright law to digital works varies across the jurisdictions studied. However, all the jurisdictions share two characteristics. First, there is a singular upward trend toward stronger rights at the expense of copyright's utilitarian justification. Second, no measure at present seems capable of addressing anticompetitive abuses by copyright owners endogenously within the copyright regime. This may have caused copyright abuses to fall within the purview of competition law.

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[697] *Little Gidding*. These last four lines of Eliot's verse spell the way to try an antitrust case, according to Joe Klein, Chief of the US Department of Justice during the *Microsoft* case. See J Heilemann, *Pride Before the Fall: The Trials of Bill Gates and the End of the Microsoft Era*, (Harper Collins: New York, 2001) at p. 191.
[698] See generally, discussion in Chapters II, III and IV.

'Anticompetitive abuse' is an arbitrary concept made more uncertain by broad textured legislation. The flexibility offered to those interpreting key terms that determine liability, have sometimes caused a divergence in approaches based on the particular economic goal and legal analytical framework chosen. From a legal perspective, judicial and regulatory decisions may fail to appreciate the nature of the grant under copyright law and tend to over or under-compensate the owner at the expense of encouraging further creative works. From an economic perspective, they may give insufficient attention to gains from dynamic efficiency. When they do, they may apply economic theory without appreciating its limitations, particularly with regard to network effects.

Fig.15 illustrates a simplified model showing the balancing process courts and regulators adopt in determining whether refusals to license amount to an anticompetitive abuse. The vertical and horizontal axes represent the owner's and public's interests[699] respectively. The 100% point on the thicker downward sloping line indicates the interest of the owner to exploit its copyright. It may be observed that the corollary to the owner's 100% interest is that the public's interest is 0%. There is no justification for requiring the owner to license. The line representing the owner's interest slopes downwards as its right to exploitation decreases until the 0% market where it hits the horizontal axis. Here, public interest is 100%, and is supreme. Here, the owner is *prima facie* obliged to license, since he has no defensible interest. Between these polar extremes is an arbitrary point, **X,** where the two graphs intersect. At **X**, competition law is indifferent between requiring the owner to license and allowing the owner to

[699] 'Public interest' collectively represents the multifarious goals of competition law, which have been discussed in detail in Chapter III. These include the interest to protect competition, competitors and consumers.

refuse to license. Non-economists will doubtlessly object to this obvious fiction, since in reality courts must decide one way or the other. However, economic theory recognises the importance of such 'pivot points' to determine which way a given case should be decided.

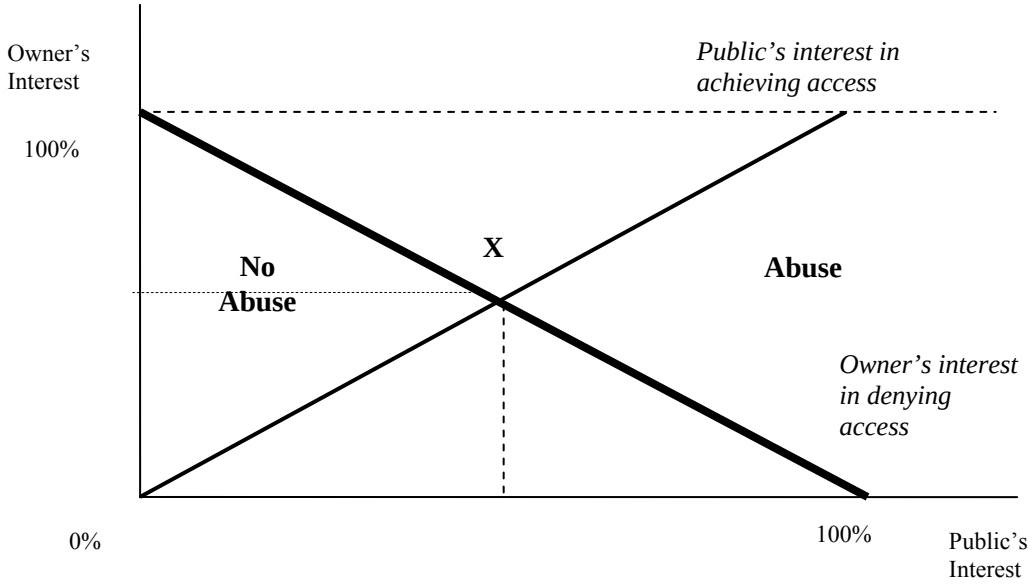

Fig. 15 This is a graphical representation of how cases involving refusals to deal are decided. It may be seen that at any point between the graphs to the left of 'X', the owner's interest is normatively higher the public's interest, as shown by the relative position of the two curves. Therefore it may be argued that there should be no 'abuse' under competition law for refusing to license its copyright. The opposite is true of any point to the right of 'X,' since here the public's interest exceeds the owner's. The challenge for those administering competition law is to base a finding that 'X' has been crossed on sound legal and economic principles.

Fig.16 tabulates every relevant factor discussed in this dissertation that influences the relative position of **X** when an owner refuses to license. Some factors support the owner's interests at the expense of the public's interest. These factors may cause the relative position of **X** to shift to the right, as illustrated in **Fig.17**. In this situation, it is unlikely that courts will be justified in finding the copyright owner liable for anticompetitive abuse. Conversely, other facts support the public's interests to access rather than the owner's interests in refusing to license. **X**

therefore shifts to the left. As **Fig.18** shows, the copyright owner will be unlikely to justify its refusal to license.

Figure 16

Chapter	Factor	Effect on "Owner's Interest"	Effect on "Public's Interest"	Net Effect on Position of 'X'	Remarks
I	**Theoretical Justifications for Copyright**	NA[700]	NA	NA	
	Labour Theory Justification	+	-	Right	Need to reward labour; minimal intervention as long as sufficient unprotected material for later authors
	Utilitarian Justification	Indeterminate	Indeterminate	Indeterminate	Depends on extent court feels that balance has been upset
	Right and Rise of Copyright (Trade/ Piracy)	-	+	Left	Need to correct utilitarian balance
	The Price of Copyright (Patent rights via copyright/ Retarding innovation)	-	+	Left	Need to correct utilitarian balance
	Insufficiency of Internal Regulation	NA	NA	NA	
	Idea-Expression Dichotomy	Indeterminate	Indeterminate	Indeterminate	Depends on how fair dealing, anticircumvention and reverse engineering provisions are interpreted
	Copyright Misuse	NA	NA	NA	Not adopted into Singapore law, but holds potentially the best means of endogenous regulation
	Compulsory Licensing	-	+	Left	Narrowly circumscribed situations make it an ineffectual remedy

[700] The effect is indicated as "NA" or "not applicable" as the factor plays no role by itself.

II	**Dominance**	NA	NA	NA	
	Primacy of Static Indicators	-	+	Left	Moderate to severe intervention
	Primacy of Dynamic Indicators	+	-	Right	Generally, minimal intervention, but depends on view of network effects
	Abuse				
	Leveraging (*Kodak* rules)	Indeterminate	Indeterminate	Indeterminate	Depends on view of business justification and owner's subjective intent
	Leveraging (*Xerox* rules)	+	-	Right	Minimal intervention *post* grant
	Essential Facilities Doctrine (Horizontal Access)	+	-	Left	Minimal intervention within primary market
	Essential Facilities Doctrine (Vertical Access)	-	+	Left	Moderate to severe intervention within secondary market
III	**Structuralist Approach**	-	+	Left	Severe intervention
	Static Efficiency Approach	-	+	Left	Moderate intervention
	Dynamic Efficiency Approach	+	-	Right	Generally, minimal intervention, but depends on view of network effects
IV	**Property Rights Approach**	NA	NA	NA	
	Copyright Formalism	+	-	Right	Minimal intervention *post* grant
	Copyright Altruism	-	+	Left	Moderate to severe intervention post grant
	Copyright Compromise	Likely +	Likely -	Likely Right	Intervention depends on criteria
	Specific Subject Matter Approach	Likely +	Likely -	Likely Right	Intervention depends on 'scope' of right determined
	Cost Benefit Approach	Indeterminate	Indeterminate	Indeterminate	Intervention depends on competition chosen policy goal/s

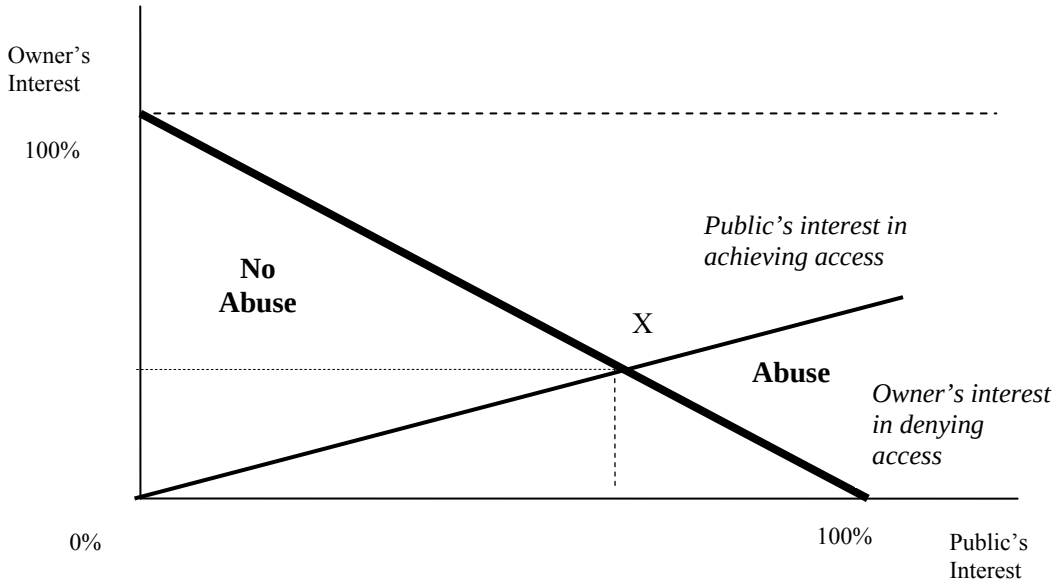

Fig. 17: This graph illustrates the situation where the owner is likely to be justified in refusing to license. The area showing 'no abuse' is significantly larger than the area showing 'abuse'. This suggests that the owner's interests will likely outweigh the public's interests.

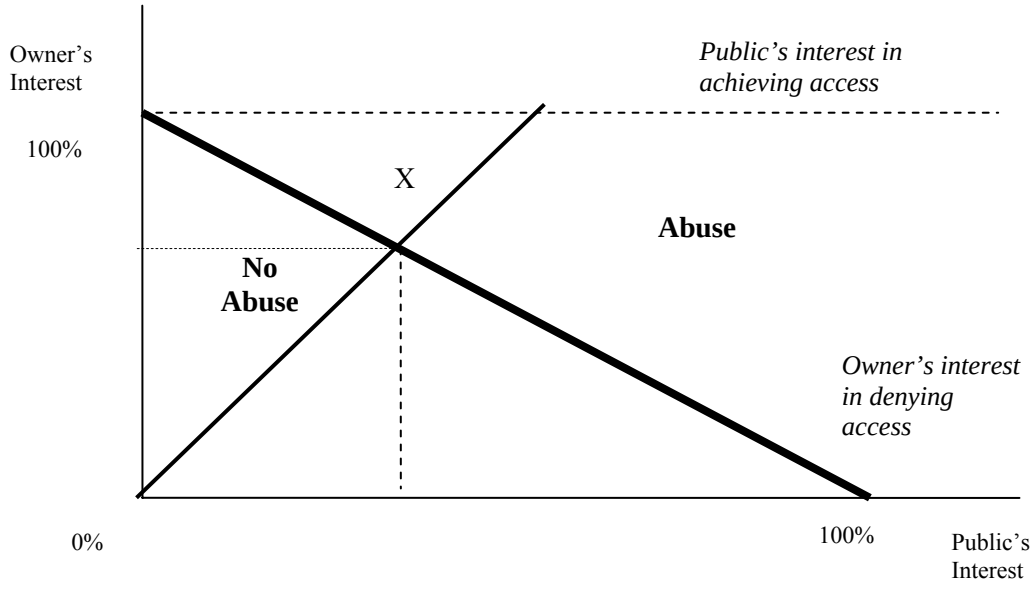

Fig. 18: This graph illustrates the situation where the owner is unlikely to be justified in refusing to license. This time, the area showing 'no abuse' is significantly smaller than the area showing 'abuse'. This suggests that the public's interests will likely outweigh the owner's interests.

II. SPECIFIC RECOMMENDATIONS

The complex rules governing refusals to license may reflect insufficient attention given to developing clear and sound first principles. There is a need to focus on simple rules rather than a complicated and cumbersome attempt to balance sector specific economics, copyright and competition policy from scratch in every case. A new approach that gives clearer guidance on high technology competition is urgently needed. In a world where IP serves as one of the sources of greatest value, a finely tuned competition policy is more important than ever before. This dissertation therefore makes four key recommendations in the digital context.

First, a conscious effort should be made to exploit the open-textured wording of Section 47 to develop Interface rules that reflect sector-specific characteristics that are responsive to changes in the economic theory underpinning them. Open-ended legal standards have the virtue of flexibility, but at the expense of quixotic results.[701] Competition policy proceeding on highly stylised, static, and inaccurate views of competition creates a high risk of policy error. Digital markets differ markedly from traditional ones involving the production and distribution of physical goods. Traditional industries are characterised by limited economies of scale at plant and firm level, stable markets, heavy capital investment, modest rates of innovation and infrequent entry and exit. In contrast, digital markets are characterised by falling average costs, relatively modest capital requirements, high rates of innovation, frequent entry and exit, and network externalities. Authorities need to be conscious that the standard of 'healthy'

[701] Chapter II, Part II.A.

competition used to determine 'dominance' and 'abuse' under Section 47 reflect these realities. 'Dominance' should reflect dynamic entry conditions rather than static price margins or market shares.[702] Allegations of 'abuse' from leveraging effects turning upon unrealistic market definitions or formalistic conditions not reflecting the utilitarian copyright bargain should be avoided.[703] 'Essential facility' cases should be restricted to secondary market relationships and must be sensitive to the copyright's interests, the benefits of vertical integration, and the need for defensive leveraging.[704] The US Supreme Court in *Trinko* was exactly right in cautioning against excessive reliance on antitrust rules to mandate dominant players to assist their competitors by giving them access to essential inputs. Although granting access often provides greater competition at the downstream level, it will also likely have a negative impact on copyright incentives.

Second, regulation of digital copyright markets should be directed primarily by dynamic efficiency considerations. Concerns about preserving SMEs reflect pious socio-political aspirations based on inconclusive evidence, rather than more readily identifiable economic targets.[705] Similarly, focusing on price and output gains of static efficiency neglects the greater benefits which technological progress brings. Any failure of market discipline on prices and output is only temporary. A long-run view of competition has brought greater consumer welfare gains as they enjoy products and services unlikely to be offered without the certainty of appropriation by IP owners and control over access to

[702] Chapter II, Part III.A.
[703] Chapter II, Part IV.B
[704] Chapter II, Part IV.C
[705] Chapter III, Part II.

their content.[706] Competition law should rarely find it necessary to intervene where consumers are 'locked-into' inferior digital products due to path dependency. Digital markets are highly dynamic and 'locked-in' consumers often end up that way deliberately because these products are functionally better,[707] or offer positive network externalities that offset any deficiencies in function.[708] Dominant copyright owners foolish enough to exploit its installed base may significantly lower switching costs, resulting in an exodus of its customers to rival technologies. Allegations by rivals or regulators who claim that the copyright owner has harmed competition or consumers in the abstract without proof of consumer harm should be stoutly rejected.

Third, a 'unified' legal framework incorporating elements of the Property Rights Approach, Specific Subject Matter Approach and Cost Benefit Approach should be the starting point in analysing refusals to license. While some analogies may be drawn between copyright and real property rights, they are fundamentally different.[709] Digital copyright, in particular is susceptible to free riding, and owners should be more justified in refusing access.[710] The extent of this justification turns on the scope of the copyright grant. By explicitly taking into account the owner's statutory rights, analysis will be more principled and conceptually certain.[711] Further, while private parties have no *locus standi* to enforce international obligations, being cognizant of them allows courts to respect

[706] Chapter III, Part III.
[707] Chapter III, Part IV.
[708] For example, use of the Microsoft Windows OS is a significantly higher than the Apple OS even though there is a general consensus that Apple's product is technically superior because of the far greater number of applications written for Windows.
[709] Chapter IV, Part II.A.
[710] Chapter IV, Part II.B.
[711] Chapter IV, Part III.A.

national commitments and gain respect of other states in turn.[712] Finally, analysis should include an express weighing of the socio-economic costs and benefits in the refusal. It may be that economic theory at the Interface does not enjoy universal consensus and has inherent limitations.[713] Judges may also have limited competence attempting the complex balancing process.[714] However, it would be nothing less than a miscarriage of justice, if courts or regulators simply aborted the only form of analysis which would bring them closer toward getting it exactly right.

Fourth and finally, copyright law should strive toward eventual independence from regulation by competition law. In its quest to promote national competitiveness and protect owners against free riding, copyright law gives digital content owners more expansive rights in than other copyright works.[715] While copyright may have preserved the owner's interests to compensation, it has done so at the expense of the utilitarian balance protecting the public's right to access. The present set of exceptions and limitations within copyright laws, including those in Singapore, fail to provide an effective check against anticompetitive abuses.[716] If applied properly, competition law should exist complementarily with copyright law, and may provide some temporary relief.[717] However, like any other form of colonial rule, regulation under Section 47 will be unlikely to be able to incorporate fully the nuances in copyright policy the same way that copyright law can. A long-term solution may therefore lie in more

[712] Chapter IV, Part III.B.
[713] Chapter IV, Part IV.A.
[714] Chapter IV, Part IV.B.
[715] Chapter I, Part II.
[716] Chapter I, Part III.
[717] Chapter I, Part IV.

generously interpreting the fair dealing provisions, developing the copyright misuse doctrine, or expanding compulsory licensing to include anticompetitive abuses similar to those found in the Patent Act.[718] Any future debate on the extent of copyright protection in developing endogenous rules should explicitly take into account both the welfare of *both* copyright users and copyright owners.

III. A FINAL WORD

As technology continues to permeate deeper into our lives, courts and regulators will increasingly be called upon to analyse allegations of abuse by undertakings in digital markets refusing access to copyright content. The essence of litigation in the end consist may less in legal doctrine, economic theory or the facts of each particular case than in presumptions about how markets and businesses behave and about what these presumptions are trying to prove. Courts are ill placed to second guess market outcomes, and rivals should be encouraged to independently innovate and develop new and better copyright content rather than relying on compulsory access as a crutch to compete. This does not mean that access should never be given. Caution must be exercised and proper weight given to the impact of mandatory access on investment decisions. Understanding of economic and business behaviour must be improved if competition policy is to avoid becoming a source of economic inefficiency itself. The creativity that Prometheus represents should never be bound by legal or economic dogma. C S Lewis sums this up by noting that:

[718] Chapter I, Part III.C.

> "We all want progress. But progress means getting nearer to the place where you want to be. And if you have taken a wrong turning, then to go forward does not get you any nearer. If you are on the wrong road, progress means doing an about turn and walking back to the right road; and in that case the man who turns back soonest is the most progressive man."[719]

How the Interface develops in Singapore will have a substantial bearing on her national economy. Interface litigation is high risk and high delay litigation. The pace of litigation is often slower than market developments. This is exacerbated by the fact that in these markets, the period from complaint to trial is often far longer than the life cycle of an average product. As Frank Easterbrook rightly noted, countries with legal systems able to deliver quick, sound and binding answers to tough questions like these will take the baton.[720]

Eventually, the best solution to this seemingly intractable problem may well be found where it all started: within copyright itself. In its haste to extend copyright to digital works without carefully considering counterbalances, copyright law has only itself to blame for its inability to maintain the utilitarian balance. It may be appropriate to redesign copyright law so that basic proprietary, economic and moral rights are secured at the core, while leaving a level of flexibility at the margins that reflects the aims and needs of individual technologies.[721] Copyright law enjoys an important advantage over competition law in deciding when to allow or prevent open access to a platform standard

[719] C S Lewis, *Mere Christianity*, (San Francisco: Harper Collins, 1980), at p. 28.
[720] F H Easterbrook, 'Ignorance and Antitrust' in T M Jorde and D J Teece, *Antitrust, Innovation and Competitiveness* (Oxford: Oxford University Press, 1992) at p.119.
[721] Burton Ong noted: "Copyright Law can approach the problem of an anti-competitive refusal to license from a number of angles. These include tinkering with the rules on the eligibility of the subject-matter for copyright protection, the nature and scope of the copyright owner's exclusive rights, and the availability of compulsory licences to would-be competitors of the copyright owner." B Ong, *supra*, n. 83, at pp.505-514.

because it operates only as a check on private conduct, not as an affirmative regulatory regime that imposes access obligations.

Whether or not this independence is achieved, the interface between competition law and digital copyright in the decades ahead will be a dynamic one: just as competition law shapes the boundaries of permissible copyright exploitation, copyright law will also refine competition law's understanding of its own nuances. The process of competition between the regimes, as each strives to prevail in each new case, promises interesting times ahead.

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APPENDICES

APPENDIX A- STATUTES

A. Singapore

Competition Act 2004	
Section 47	(1) Subject to section 48, any conduct on the part of one or more undertakings which amounts to the abuse of a dominant position in any market in Singapore is prohibited. (2) For the purposes of subsection (1), conduct may, in particular, constitute such an abuse if it consists in — (a) predatory behaviour towards competitors; (b) limiting production, markets or technical development to the prejudice of consumers; (c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage; or (d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of the contracts. (3) In this section, "dominant position" means a dominant position within Singapore or elsewhere.
Third Schedule, Section 3(4)	If the Minister is satisfied that, in order to avoid a conflict between the provisions of Part III and an international obligation of Singapore, it would be appropriate for the section 47 prohibition not to apply in particular circumstances, he may by order provide for it not to apply in such circumstances as may be specified.
Third Schedule, Section 4(4)	If the Minister is satisfied that there are exceptional and compelling reasons of public policy why the section 47 prohibition ought not to apply in particular circumstances, he may by order provide for it not to apply in such circumstances as may be specified.
Copyright Act 1999	
Section 25	(1) In the case of a copyright of which (whether as a result of a partial assignment or otherwise) different persons are the owners in respect of its application to — (a) the doing of different acts or classes of acts; or (b) the doing of one or more acts or classes of acts in different countries or at different times, the owner of the copyright, for any purpose of this Act, shall be deemed to be the person who is the owner of the copyright in respect of its application to the doing of the particular act or class of acts, or to the doing of the particular act or class of acts in the particular country or at the particular time, as the case may be, that is relevant to that purpose, and a reference in this Act to the prospective owner of a future copyright of which different persons are the prospective owners shall have a corresponding meaning. (2) Without prejudice to subsection (1), where under any provision of this Act a question arises whether an article of any description has been imported or sold, or otherwise dealt with, without the licence of the owner of any copyright, the owner of the copyright, for the purpose of determining that question, shall be taken to be the person entitled to the copyright in respect of its application to the making of articles of that description in the country into which the article was imported, or, as the case may be, in

	which it was sold or otherwise dealt with.
Section 33	(1) The copyright in a literary, dramatic, musical or artistic work is infringed by a person who, in Singapore, and without the licence of the owner of the copyright — (a) sells, lets for hire, or by way of trade offers or exposes for sale or hire, an article; or (b) by way of trade exhibits an article in public, where he knows, or ought reasonably to know, that the making of the article constituted an infringement of the copyright or, in the case of an imported article, the making of the article was carried out without the consent of the owner of the copyright.
Section 35	(1) Subject to this section, a fair dealing with a literary, dramatic, musical or artistic work, or with an adaptation of a literary, dramatic or musical work, for any purpose other than a purpose referred to in section 36 or 37 shall not constitute an infringement of the copyright in the work. (1A) The purposes for which a dealing with a literary, dramatic, musical or artistic work, or with an adaptation of a literary, dramatic or musical work, may constitute a fair dealing under subsection (1) shall include research and study. (2) For the purposes of this Act, the matters to which regard shall be had, in determining whether a dealing with a literary, dramatic, musical or artistic work or with an adaptation of a literary, dramatic or musical work, being a dealing by way of copying the whole or a part of the work or adaptation, constitutes a fair dealing with the work or adaptation for any purpose other than a purpose referred to in section 36 or 37 shall include — (a) the purpose and character of the dealing, including whether such dealing is of a commercial nature or is for non-profit educational purposes; (b) the nature of the work or adaptation; (c) the amount and substantiality of the part copied taken in relation to the whole work or adaptation; (d) the effect of the dealing upon the potential market for, or value of, the work or adaptation; and (e) the possibility of obtaining the work or adaptation within a reasonable time at an ordinary commercial price. (3) Notwithstanding subsection (2), a dealing with a literary, dramatic or musical work, or with an adaptation of such a work, being a dealing by way of the copying, for the purposes of research or study — (a) if the work or adaptation comprises an article in a periodical publication, of the whole or a part of that work or adaptation; or (b) in any other case, of not more than a reasonable portion of the work or adaptation, shall be taken to be a fair dealing with that work or adaptation for the purpose of research or study. (4) Subsection (3) shall not apply to a dealing by way of the copying of the whole or a part of an article in a periodical publication if another article in that publication, being an article dealing with a different subject-matter, is also copied. (5) (*Deleted by Act 6/98*)
Section 39A	**(**1) Subject to subsection (2), the copyright in a literary work, being a computer program expressed in a low level language, is not infringed by a lawful user of the computer program decompiling it if — (a) it is necessary to decompile the computer program to achieve the objective of obtaining the information necessary to create an independent computer program which can be operated with the

	computer program decompiled or with another computer program (referred to in this section as the permitted objective); and (b) the information so obtained is not used for any purpose other than the permitted objective. (2) Subsection (1) shall not apply if the lawful user — (a) has readily available to him the information necessary to achieve the permitted objective; (b) does not confine the decompiling to such acts as are necessary to achieve the permitted objective; (c) supplies the information obtained by the decompiling to any person to whom it is not necessary to supply the information in order to achieve the permitted objective; or (d) uses the information — (i) to create a computer program which is substantially similar in its expression to the computer program decompiled; or (ii) to do any act restricted by copyright. (3) Where an act is permitted under this section — (a) it shall be irrelevant whether or not there exists any term or condition in an agreement which purports to prohibit or restrict the act; and (b) any such term or condition shall, in so far as it purports to prohibit or restrict the act, be void. (4) For the avoidance of doubt, this section is without prejudice to the generality of section 35 and does not limit the operation of that section. (5) For the purposes of this section and sections 39B and 39C, a person is a lawful user of a computer program if he has a right to use the computer program, whether under a licence to do any act restricted by the copyright in the computer program or otherwise. (6) In this section, "decompiling", in relation to a computer program expressed in a low level language, means — (a) converting the computer program into a version expressed in a higher level language; or (b) incidentally in the course of so converting the computer program, copying the computer program, and "decompile" shall be construed accordingly.
Sections 39B	(1) The copyright in a literary work, being a computer program, is not infringed by a lawful user of the computer program observing, studying or testing the functioning of the computer program in order to determine the ideas and principles which underlie any element of the computer program, if he does so while performing any of the acts of loading, displaying, running, transmitting or storing the computer program which he is entitled to do. (2) Where an act is permitted under this section — (a) it shall be irrelevant whether or not there exists any term or condition in an agreement which purports to prohibit or restrict the act; and (b) any such term or condition shall, in so far as it purports to prohibit or restrict the act, be void. (3) For the avoidance of doubt, this section is without prejudice to the generality of section 35 and does not limit the operation of that section.
Sections 39C	(1) Subject to subsection (3), the copyright in a literary work, being a computer program, is not infringed by a lawful user of the computer program copying or adapting the computer program, if such copying or adapting is necessary for his lawful use.

	(2) For the avoidance of doubt, it may be necessary for the lawful use of a computer program to copy or adapt the computer program for the purpose of correcting errors in the computer program. (3) Subsection (1) shall not apply to any copying or adapting permitted under section 39 or 39A.
Patents Act 1995	
Section 55	(1) At any time after the expiration of 3 years from the date of the grant of a patent or 4 years from the date of filing of the patent application, whichever is the later, any person interested may apply to the court for the grant of a licence under the patent upon any of the grounds specified in subsection (2). (2) The grounds upon which a licence may be granted under this section are that a market for the patented invention is not being supplied, or is not being supplied on reasonable terms, in Singapore.
Patents Act 2002	
Section 55	(1) Any interested person may apply to the court for the grant of a licence under a patent on the ground that the grant of the licence is necessary to remedy an anti-competitive practice. (2) Without prejudice to the generality of subsection (1), the court may determine that the grant of a licence is necessary to remedy an anti-competitive practice if — (a) there is a market for the patented invention in Singapore; (b) that market — (i) is not being supplied; or (ii) is not being supplied on reasonable terms; and (c) the court is of the view that the proprietor of the patent has no valid reason for failing to supply that market with the patented invention, whether directly or through a licensee, on reasonable terms.
Layout-Designs of Integrated Circuits Act	
Section 27	**(**1) A person who claims that he requires a licence to do any act referred to in section 8 in relation to a protected layout-design may apply to the Court for the grant of a licence upon the ground that the grant of the licence is necessary to remedy an anti-competitive practice. (2) If the Court is satisfied that the ground referred to in subsection (1) is established, the Court may make an order for the grant of a licence in accordance with the application upon such terms as the Court thinks fit. (3) The Court shall specify in the order such remuneration to be paid to the qualified owner for the licence as the Court considers reasonable.

B. United Kingdom/ European Union

UK Competition Act 1998	
Section 18	(1) Subject to section 19, any conduct on the part of one or more undertakings which amounts to the abuse of a dominant position in a market is prohibited if it may affect trade within the United Kingdom. (2) Conduct may, in particular, constitute such an abuse if it consists in- (a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions; (b) limiting production, markets or technical development to the prejudice of consumers; (c) applying dissimilar conditions to equivalent transactions with

	other trading parties, thereby placing them at a competitive disadvantage; (d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of the contracts. (3) In this section- "dominant position" means a dominant position within the United Kingdom; and "the United Kingdom" means the United Kingdom or any part of it.
EC Treaty	
Article 82	Any abuse by one or more undertakings of a dominant position within the common market or in a substantial part of it shall be prohibited as incompatible with the common market in so far as it may affect trade between Member States. Such abuse may, in particular, consist in: (a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions; (b) limiting production, markets or technical development to the prejudice of consumers; (c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage; (d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.
Charter of Fundamental Rights of the European Union Article 17	1. Everyone has the right to own, use, dispose of and bequeath his or her lawfully acquired possessions. No one may be deprived of his or her possessions, except in the public interest and in the cases and under the conditions provided for by law, subject to fair compensation being paid in good time for their loss. The use of property may be regulated by law in so far as is necessary for the general interest. 2. Intellectual property shall be protected.

C. United States of America

Sherman Act	
Section 1	Every contract, combination in the form of trust or otherwise, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal. Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony, on conviction thereof, shall be punished by fine not exceeding $10,000,000 if a corporation, or, if any other person, $350,000, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court.
Section 2	Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony, and, on conviction thereof, shall be punished by fine not exceeding $10,000,000 if a corporation, or, if any other person, $350,000, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court.

17 USC (Copyright)	
§ 102(b)	In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

APPENDIX B – INTERNATIONAL INSTRUMENTS

1. TRIPS

Article 6	For the purposes of dispute settlement under this Agreement, subject to the provisions of Articles 3 and 4 nothing in this Agreement shall be used to address the issue of the exhaustion of intellectual property rights.
Article 7	The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.
Article 8	1. Members may, in formulating or amending their laws and regulations, adopt measures necessary to protect public health and nutrition, and to promote the public interest in sectors of vital importance to their socio-economic and technological development, provided that such measures are consistent with the provisions of this Agreement. 2. Appropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology.
Article 10	1. Computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971). 2. Compilations of data or other material, whether in machine readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations shall be protected as such. Such protection, which shall not extend to the data or material itself, shall be without prejudice to any copyright subsisting in the data or material itself.
Article 12	Whenever the term of protection of a work, other than a photographic work or a work of applied art, is calculated on a basis other than the life of a natural person, such term shall be no less than 50 years from the end of the calendar year of authorized publication, or, failing such authorized publication within 50 years from the making of the work, 50 years from the end of the calendar year of making.
Article 13	Members shall confine limitations or exceptions to exclusive rights to certain special cases which do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the right holder.
Article 27.1	Subject to the provisions of paragraphs 2 and 3, patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application.[722] Subject to paragraph 4 of Article 65, paragraph 8 of Article 70 and paragraph 3 of this Article, patents shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced.
Article 30	Members may provide limited exceptions to the exclusive rights conferred

[722] For the purposes of this Article, the terms "inventive step" and "capable of industrial application" may be deemed by a Member to be synonymous with the terms "non-obvious" and "useful" respectively.

	by a patent, provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties.
Article 31	Where the law of a Member allows for other use[723] of the subject matter of a patent without the authorization of the right holder, including use by the government or third parties authorized by the government, the following provisions shall be respected: (a) authorization of such use shall be considered on its individual merits; (b) such use may only be permitted if, prior to such use, the proposed user has made efforts to obtain authorization from the right holder on reasonable commercial terms and conditions and that such efforts have not been successful within a reasonable period of time. This requirement may be waived by a Member in the case of a national emergency or other circumstances of extreme urgency or in cases of public non-commercial use. In situations of national emergency or other circumstances of extreme urgency, the right holder shall, nevertheless, be notified as soon as reasonably practicable. In the case of public non-commercial use, where the government or contractor, without making a patent search, knows or has demonstrable grounds to know that a valid patent is or will be used by or for the government, the right holder shall be informed promptly; (c) the scope and duration of such use shall be limited to the purpose for which it was authorized, and in the case of semi-conductor technology shall only be for public non-commercial use or to remedy a practice determined after judicial or administrative process to be anti-competitive; (d) such use shall be non-exclusive; (e) such use shall be non-assignable, except with that part of the enterprise or goodwill which enjoys such use; (f) any such use shall be authorized predominantly for the supply of the domestic market of the Member authorizing such use; (g) authorization for such use shall be liable, subject to adequate protection of the legitimate interests of the persons so authorized, to be terminated if and when the circumstances which led to it cease to exist and are unlikely to recur. The competent authority shall have the authority to review, upon motivated request, the continued existence of these circumstances; (h) the right holder shall be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization; (i) the legal validity of any decision relating to the authorization of such use shall be subject to judicial review or other independent

[723] "Other use" refers to use other than that allowed under Article 30.

	review by a distinct higher authority in that Member; (j) any decision relating to the remuneration provided in respect of such use shall be subject to judicial review or other independent review by a distinct higher authority in that Member; (k) Members are not obliged to apply the conditions set forth in subparagraphs (b) and (f) where such use is permitted to remedy a practice determined after judicial or administrative process to be anti-competitive. The need to correct anti-competitive practices may be taken into account in determining the amount of remuneration in such cases. Competent authorities shall have the authority to refuse termination of authorization if and when the conditions which led to such authorization are likely to recur; (l) where such use is authorized to permit the exploitation of a patent ("the second patent") which cannot be exploited without infringing another patent ("the first patent"), the following additional conditions shall apply: (i) the invention claimed in the second patent shall involve an important technical advance of considerable economic significance in relation to the invention claimed in the first patent; (ii) the owner of the first patent shall be entitled to a cross-licence on reasonable terms to use the invention claimed in the second patent; and (iii) the use authorized in respect of the first patent shall be non-assignable except with the assignment of the second patent.
Article 40	1. Members agree that some licensing practices or conditions pertaining to intellectual property rights which restrain competition may have adverse effects on trade and may impede the transfer and dissemination of technology. 2. Nothing in this Agreement shall prevent Members from specifying in their legislation licensing practices or conditions that may in particular cases constitute an abuse of intellectual property rights having an adverse effect on competition in the relevant market. As provided above, a Member may adopt, consistently with the other provisions of this Agreement, appropriate measures to prevent or control such practices, which may include for example exclusive grantback conditions, conditions preventing challenges to validity and coercive package licensing, in the light of the relevant laws and regulations of that Member. 3. Each Member shall enter, upon request, into consultations with any other Member which has cause to believe that an intellectual property right owner that is a national or domiciliary of the Member to which the request for consultations has been addressed is undertaking practices in violation of the requesting Member's laws and regulations on the subject matter of this Section, and which wishes to secure compliance with such legislation, without prejudice to any action under the law and to the full freedom of an

	ultimate decision of either Member. The Member addressed shall accord full and sympathetic consideration to, and shall afford adequate opportunity for, consultations with the requesting Member, and shall cooperate through supply of publicly available non-confidential information of relevance to the matter in question and of other information available to the Member, subject to domestic law and to the conclusion of mutually satisfactory agreements concerning the safeguarding of its confidentiality by the requesting Member. 4. A Member whose nationals or domiciliaries are subject to proceedings in another Member concerning alleged violation of that other Member's laws and regulations on the subject matter of this Section shall, upon request, be granted an opportunity for consultations by the other Member under the same conditions as those foreseen in paragraph 3.

2. <u>The Berne Convention</u>

Article 6bis	(1) Independently of the author's economic rights, and even after the transfer of the said rights, the author shall have the right to claim authorship of the work and to object to any distortion, mutilation or other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honor or reputation. (2) The rights granted to the author in accordance with the preceding paragraph shall, after his death, be maintained, at least until the expiry of the economic rights, and shall be exercisable by the persons or institutions authorized by the legislation of the country where protection is claimed. However, those countries whose legislation, at the moment of their ratification of or accession to this Act, does not provide for the protection after the death of the author of all the rights set out in the preceding paragraph may provide that some of these rights may, after his death, cease to be maintained. (3) The means of redress for safeguarding the rights granted by this Article shall be governed by the legislation of the country where protection is claimed.
Article 9	(1) Authors of literary and artistic works protected by this Convention shall have the exclusive right of authorizing the reproduction of these works, in any manner or form. (2) It shall be a matter for legislation in the countries of the Union to permit the reproduction of such works in certain special cases, provided that such reproduction does not conflict with a normal exploitation of the work and does not unreasonably prejudice the legitimate interests of the author. (3) Any sound or visual recording shall be considered as a reproduction for the purposes of this Convention.
Article 10bis	(1) It shall be a matter for legislation in the countries of the Union to permit the reproduction by the press, the broadcasting or the communication to the public by wire, of articles published in newspapers or periodicals on current economic, political or religious topics, and of broadcast works of the same character, in cases in which the reproduction, broadcasting or such

	communication thereof is not expressly reserved. Nevertheless, the source must always be clearly indicated; the legal consequences of a breach of this obligation shall be determined by the legislation of the country where protection is claimed. (2) It shall also be a matter for legislation in the countries of the Union to determine the conditions under which, for the purpose of reporting current events by means of photography, cinematography, broadcasting or communication to the public by wire, literary or artistic works seen or heard in the course of the event may, to the extent justified by the informatory purpose, be reproduced and made available to the public.
Article 10	(1) It shall be permissible to make quotations from a work which has already been lawfully made available to the public, provided that their making is compatible with fair practice, and their extent does not exceed that justified by the purpose, including quotations from newspaper articles and periodicals in the form of press summaries. (2) It shall be a matter for legislation in the countries of the Union, and for special agreements existing or to be concluded between them, to permit the utilization, to the extent justified by the purpose, of literary or artistic works by way of illustration in publications, broadcasts or sound or visual recordings for teaching, provided such utilization is compatible with fair practice. (3) Where use is made of works in accordance with the preceding paragraphs of this Article, mention shall be made of the source, and of the name of the author, if it appears thereon.
Article 13	(1) Each country of the Union may impose for itself reservations and conditions on the exclusive right granted to the author of a musical work and to the author of any words, the recording of which together with the musical work has already been authorized by the latter, to authorize the sound recording of that musical work, together with such words, if any; but all such reservations and conditions shall apply only in the countries which have imposed them and shall not, in any circumstances, be prejudicial to the rights of these authors to obtain equitable remuneration which, in the absence of agreement, shall be fixed by competent authority. (2) Recordings of musical works made in a country of the Union in accordance with Article 13 (3) of the Convention signed at Rome on June 2, 1928, and at Brussels on June 26, 1948, may be reproduced in that country without the permission of the author of the musical work until a date two years after that country becomes bound by this Act. (3) Recordings made in accordance with paragraphs (1) and (2) of this Article and imported without permission from the parties concerned into a country where they are treated as infringing recordings shall be liable to seizure.

APPENDIX C – INDUSTRIAL STANDARDS *

Standards facilitate the interaction of sellers and buyers or users and providers and the interfacing of one product with another. Two products are compatible if they can be used together. Where several identical or complementary products work together, a network is formed. A set of product characteristics becomes a standard when it is incorporated in all or a significant part of the industry where the product is used. Standards may be simple, like those in the electric plug, or complex like those in a computer interface.

Markets affected by network effects require standards to facilitate coordination. Compatibility provides access to an installed base of customers. Access to a network is a crucial to a network business's success. An example is a computer's operating system (OS). Software applications must interconnect with the computer hardware to operate. Operating systems incorporate common functions, which need to be invoked by many applications. In the absence of an OS, each software application would have to incorporate its own mini-OS. Combining these common functions in an OS enables applications to omit those functions and enables the cost of producing the functions to be spread over the entire personal computer base, thus vastly reducing costs. Other examples include the Internet, B2Bs, telecommunications systems, computer operating systems, transportation systems, stock exchanges, and ATM and credit card systems.

Networks users benefit from the ability to access and connect with each other. By adopting uniform standards for interconnection, networks assure that all participants can use the system on equal terms. Because networks can only operate effectively under a single standard, they tend to vest dominant market power in the firm that owns the standard, leaving little, if any, room in the relevant market for other players. For example, in the Windows OS market, network effects imply that the greater the number of copies of Windows that are in use, the greater its value to users because the number of applications available for Windows will be positively influenced by the number of its users. In addition, entry, competition and innovation will be easier if a rival need only produce a single better component, than if each innovator must develop an entire system.

The stronger the network effects, the more powerful will be the pressures in the direction of a single standard. Those standards can be the product of private agreement, as in the DVD industry, or *de facto* standards can be the result of market forces, as in the personal computer industry. Because the Windows OS is in widespread use, it has sometimes been referred to as a *de facto* standard.

It should be evident from the foregoing that compatibility is a key factor in the network economy. Standards not only determine the parameters of the game but also construct the playing field and decide which teams get to play. A standard can promote competition if it creates an open and level playing field for new market entrants.

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* Sources: A D Melamed, 'Network Industries and Antitrust', (2000) 23 Harv. J.L. & Pub. Pol'y 147; J Farrell, 'Standardisation and Intellectual Property', in P Drahos (ed), *Intellectual Property* (Altershot: Ashgate, 2000); G Lea, 'Raising the Standard?: The Interaction of Intellectual Property Rights with Competition Law in the Context of Standard Setting in the Software and Telecommunications Sectors', Intellectual Property Institute Seminar (27th October 1999); I Rahnasto, *Intellectual Property Rights, External Effects and Anti-trust Law*, (Oxford: Oxford University Press, 2003) J M Mueller, 'Patent Misuse through Capture of Industry Standards', (2002) 17 Berkeley Tech. L.J. 623; R T Nimmer, 'Standards, Antitrust and Intellectual Property' (1995) 414 PLI/PAT 797; R J Kaufman *et al*, 'Opening the Black Box of Network Externalities in Network Adoption' (2000) 11 Information Systems Research 61; D J Gifford, 'Developing Models for a Coherent Treatment of Standard-Setting Issues Under the Patent, Copyright, and Antitrust Laws' (2003) 43 IDEA 331

However, a number of separate firms may own components in a network. Generally, owners intending to participate in a market for standardised products are unlikely to refuse to license its copyright. If it were to do so, other undertakings with necessary copyright would probably refuse to license to it, making it impossible for anyone to benefit from the standard. Without standardisation, different owners would act opportunistically, raising transaction costs and creating uncertainty.

However, owners may sometimes use copyright to control the extent to which rivals benefit from network effects. For companies developing proprietary applications that function as information platforms, protecting their standard often through copyright is critical to enabling them to succeed. In the case of a game console, for example, the inventor may well safeguard access to its platform standard to prevent a potential rival from accessing its system and appropriating the value of the original invention by developing a clone. For such basic standards, copyright law confronts a dilemma.

On one hand, allowing one firm to control standards may prevent the technology from gaining adopters. In these circumstances, copyright might convert initial success into permanent dominance, if it helped the initially successful firm to maintain control over product interface technology. Standardisation reduces variety by constraints in architectural design. Innovation is also retarded as consumers and producers of complementary products may find themselves locked into a standard. This is an economic theory based on the idea that no user would want to bear the heavy switching costs inflicted on the first group that switches to the new standard. On the other hand, not allowing the creator to reap rewards from its work will fail to provide an incentive for firms to innovate in the first place. Consumers benefit from standardisation not only because they can reliably use their products in remote locations, but also because they can exchange information with others who use the same standard. Customers often not technologically savvy and are reluctant to choose between competing technologies, since they may be locked into inferior technology if they make the wrong choices. By joining the majority, there is a high likelihood that particularly amongst the earlier entrants, there are those who have made an informed choice.

APPENDIX D- REVERSE ENGINEERING*

A software engineer may write software which becomes the industry standard, and acts as the architecture for communication between related applications. Copyright protects the interface information, a set of electronic keys requiring precise emulation in order to secure operation between programs. In order to develop compatible interoperable programs, it is often necessary to decompile it to access its source code to discover this information. This is a quintessential form of reverse engineering. Several methods of reverse engineering pose little legal risk of copyright infringement. For instance, studying published documentation, performing timing tests and observing the inputs, outputs, and conditions of operation are all methods of reverse engineering that pose no legal problems regarding the rights of a copyright owner. Reverse engineering by decompilation has been repeatedly challenged as a violation of copyright. It requires at least a partial reproduction of the original object code program. To the extent that the reproduced object code is protected by copyright, the making of this temporary copy constitutes *prima facie* copyright infringement.

Copyright law permits reverse engineering in a functional sense. One could find the uncopyrightable ideas hidden in a book without copying the book, and therefore without triggering copyright law at all. As copyrighted works are placed in digital form, this has changed. Virtually every use of a digital work involves the making of at least one copy. In response to this change, courts have created a limited right to reverse engineer a work in order to extract uncopyrightable information from the work.

In industries with network effects, there is a strong economic argument in favour of permitting reverse engineering where it promotes either vertical or horizontal compatibility with an industry standard. Users of products that work with an industry standard will benefit from its widespread adoption. If competitors produce goods that are broadly compatible products, consumers will be able to switch freely between products. At the same time, competition among providers of products incorporating that standard will remain. This is not necessarily a clear benefit to competition. Instead, it foregoes competition where competition that would otherwise have occurred to set the *de facto* standard in favour of competition among competing suppliers of standard-compatible products.

* Sources: G Wei, *The Law of Copyright in Singapore*, (SNP Editions: Singapore, 2000), at pp.1251-5; W Cornish and D Llewellyn, *Intellectual Property: Patents, Copyright, Trademarks and Allied Rights* (London: Sweet & Maxwell, 5th Edition, 2003) at p.755.

APPENDIX E - GLOSSARY

Term	Definition
Allocative efficiency	Where prices equal marginal cost of production, which in turn maximises the output of society's resources.
Antitrust laws	Statutes that limit the market power exercised by firms and control how firms compete with each other.
Application Tools	Application tools are programs used by programmers to retrieve, process and manage data and databases, and to develop application solutions. These tools range from spreadsheets, to database managements systems. Most application tools incorporate programming languages that can be used by relatively unskilled programmers to develop simple applications.
Application Program Interfaces (APIs)	Points of contact between software and the operating system. Hence it is to these APIs that application software conforms.
Asymmetric Information	One party to a transaction knows a material fact the other party does not know.
Assembly	Converting a low-level assembly language into object code.
Barrier to entry	Anything that prevents an entrepreneur from instantaneously creating a new firm in a market.
Bounded Rationality	The inability to fully understand and predict all future possibilities because courts and regulators are not omniscient.
Capture theory	An industry 'captures' (persuades, bribes or threatens) the regulators, so that the regulators do what the industry wants.
CFI	Court of First Instance. Here it refers to the Courts in the European Union.
Compiling	Compiling a computer program means converting a high level language code program into an object code that is machine readable.
Competition	Competition is a rivalrous relationship between undertakings selling similar goods or services at the same time to an identifiable group of customers.
Competition law	Rules to promote market competition and strengthen efficiency.
Competition Policy	Government policies that preserve and protect competition among independent buyers and sellers in relatively unregulated markets. This includes market opening policies that promote competition in national markets and laws that regulate commercial trade and conduct. Of these, two notable ones are competition law and intellectual property law.
Computer Software	The International Standardisation Organisation and WIPO give similar definitions of computer software and services which can be summarised as follows. Software is the production of a structured set of instructions, procedures, programs, rules and documentation contained in any types of physical support with the aim of making possible the use of electronic data processing equipment. (OECD, 1985).
Concentrated	An industry is concentrated if a few firms make most of the sales.
Consumer Surplus	The amount above the price paid that a consumer would willingly spend, if necessary, to consume the units purchased.
Contestable	A market is contestable if there is free entry and exit. An entrant has access to all production techniques available to the incumbents, is not prohibited from wooing the incumbent's

	customers, and entry decisions can be reversed without cost. It is, however, not synonymous with markets subject to real potential competition.
Copyright	Copyright protects original works of authorship fixed in any tangible medium of expression. Broadly, copyright infringement occurs when third parties reproduce or distribute copies of the copyrighted work without the owner's consent.
Deadweight Loss	The cost to society of a market that does not operate optimally.
Decompilation	Process of obtain interface details. For example, A may wish to develop a new word processing program. A will need to know details of various computer operating systems so that it can work in the computer's operating environment. A must determine how the operating systems use the computer's memory so that it's the word processing program can run properly. Also, to be successful, this program must be compatible with other existing programs. It must be able to import fields produced by other word processors and export them to non-word processors.
Decreasing Returns to Scale	Average cost rises with output (also known as diseconomies of scale)
Disassembly	Produces assembly language from an object code version of a computer program. Unlocks the ideas and techniques contained in the object code version of the program.
Dominant Firm	A price-setting firm that faces smaller, price taking firms.
Downstream Firms	Firms that produce the final good.
Durable Goods	Goods that last for several time periods.
Dynamic efficiency	Competition takes place *for* the market. Firms compete through innovation to dominate the market. Those that succeed are enjoy a 'fragile monopoly' because they can only retain their position if they continue to innovate. Scale economies in production together with network effects may result in a few dominant firms able to function at the lowest costs. Successful innovators must charge more than marginal cost to compensate for their fixed costs and risky investment. The average returns for competitors, adjusted for risk, are normal. But winners receive huge profits and control the industry standard with its IPRs. However, this may not mean that competition has failed.
Easements	A species of real property by which one landowner has a right over the land of another. As an interest in land, it is separate from, but 'parasitic upon the land'.
Economic rent	The return for the use of a factor in excess of the minimum required to bring the factor into use.
ECJ	The European Court of Justice. The highest administrative court of appeal in the European Union.
Economies of Scale	Where increases in output lead to falling average costs of production.
Entry Conditions	Firms enter the market when profits are positive and exit when profits are negative.
Essential Facilities	Scarce resources that a competitor needs to use to survive.
Essential Facilities Doctrine	The doctrine recognizes that a monopolist can gain an unfair competitive advantage in a related market by denying its competitors the right to access a resource required to engage in effective competition in that market.
Exclusionary Abuse	A situation in which a dominant undertaking uses its position of

	power to drive its competitors out of the market, prevent potential competitors from entering, or make it difficult from them to compete with the dominant player.
Exploitative Abuse	A situation in which a dominant undertaking uses its position of power to exploit the market and make a supra-competitive profit. This behaviour is suggested as being rational for a monopolist who wishes to maximise its profits, and its avoidance is therefore considered to be one of the main aims of any competition law system. (Note: this does not apply in Singapore)
Externality	The direct effect on the well being of a consumer or the production capability of a firm from the actions of other consumers or firms.
Fair Use/ Fair Dealing	A copyright law doctrine intended to allow third parties the use of protected expression certain circumstances.
Fee Simple	A property right allowing heirs to succeed the interest of the owner on his death. At common law, the fee simple was the largest segment of time that an individual could hold land.
Firm	An organisation that transforms inputs (resources it purchases) into outputs (valued products that it sells).
First Mover Advantage	The first firm to enter incurs lower costs because it faces no rivals.
First Sale Doctrine	An owner who voluntarily puts its goods on the market exhausts its right to control its resale.
Fixed Costs	Expenses that do not vary with the level of output.
Free Riding	A situation where someone obtain a benefit from another's investment without paying for it.
Herfindahl-Hirschman Index	The sum of the squared market shares of each firm in the industry.
Horizontal Compatibility	Common communications standards that allow each part of the network to work effectively with its other parts.
Increasing Returns to Scale	Average cost falls as output increases.
Industrial Organisation	The study of the structure of firms and markets and of their interaction.
Inelasticity	A demand curve is inelastic if a 1% increase in price reduces the quantity demanded by less than 1%.
Infocommunications	A facility allowing the transmission of information between individual using fibre-optic cables.
Instant scalability	Where a firm's output can be increased rapidly without the usual additional costs associated with rapid increases in output. Where products are differentiated and where consumers have similar preferences, a product that consumers identify as 'best' can be quickly offered in sufficient quantity to satisfy the entire market.
Internalising the Externality	Forcing someone who is causing an externality to bear the full social costs (for example, force a firm to pay for the pollution it creates.)
Intellectual Property Rights	Rights relating to literary, artistic and scientific works, performances and performing artists, photographs and broadcasts; inventions in all fields of human endeavour-scientific discoveries, industrial designs; trademarks, service marks, and commercial names and designations; protection against unfair competition and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic

	fields.
ISO	Independent service organisations
Leveraging	A tactic by which an undertaking with monopoly power, such as those conferred by IPRs, in one market exploits that power into another market. It also refers to leveraging power from one product to another, as in tying cases.
License	. A species of real property which does not pass any property interest, but only makes lawful an action which would otherwise be unlawful. . A permit granted by the IP owner to another firm to produce the product or use the process.
Long Run	A sufficiently lengthy period of time such that all factors of production can be costlessly varied.
Marginal Cost	The increase in total cost as a result of producing an additional unit of the good.
Marginal Revenue	The extra revenues that a firm receives when it produces one more unit of the product.
Market Definition	The competing product and geographic area in which competition occurs that determines the price for a given product.
Market Failure	Distortions or inefficient production due to improper pricing.
Market Power	The ability of a firm to set price profitably above competitive levels. (marginal cost)
Middleware	The term "middleware" has been used to describe software such as Netscape's Navigator Internet browser and Sun Microsystem's "Java" software, which have the capability to serve as platforms for the operation of applications programs. As such software becomes capable of supporting a growing number of applications, it ultimately could compete with Microsoft's Windows program.
Monopoly	A single seller in the market.
Negative Externality	A 'bad' that is not priced (such as pollution)
Network	Any system that facilitates the exchange of information, money, goods or services among individuals or firms.
Network effects	A phenomenon where the benefits of consuming a good or service depends positively on the number of individuals who also do so. These may also be known as demand-side economies of scale or Metcalfe's law.
Operating system (OS)	The software platform that allows applications to run on a computer.
Patent	A limited monopoly that is granted in return for the disclosure of technical information. The applicant is required to disclose its invention so that it can be sued by a 'person skilled in the art'. In return, the state issues the applicant with a patent that gives it the right to control the way its patented invention is exploited for a 20 year period.
Path dependency	A phenomenon where the possibility that small events at a given time might have major effects on the long run evolution of a specific technological trajectory. In particular, an industry may be stuck in an inferior technology because of the cost advantages of the existing network.
Perfect Competition	A market outcome in which all firms produce homogenous, perfectly divisible output and face no barriers to entry or exit; producers and consumers have full information, incur no

	transaction costs , and are price takers; and there are no externalities.
Per Se Violation	An action that by itself, is illegal.
Piracy	Piracy is understood broadly to include any situation where the copyright owner is not able to appropriate returns from an expected sale of its work.
Positive Externality	An uncompensated action that benefits others.
Predatory Pricing	A firm first lowers its price in order to drive rivals out of business and scare off potential entrants and then raises its price when rivals exit the market.
Price-cost margin	A measure of the markup of price over marginal cost.
Primary Market	The primary market is the market served, and in many cases made possible by, an electronic network. In the primary market, firms use a network to provide products and services to users. A computer operating system, for example, serves several different primary markets, including word processing, databases, spreadsheets, electronic mail, games, and Internet browsers.
Product Differentiation	A market strategy that firms use to 'relax' price competition. Products may be differentiated horizontally, by location or vertically, by quality.
Property Rights	Exclusive rights to use some asset.
Public Good	Something useful which, if supplied to one person, can be made available to others at no extra cost.
Regulatory capture	A situation identified by industrial economic theory where the regulator unduly favours the regulated party, because of bribes or similar incentives.
Resale Price Maintenance	The manufacturer sets a minimum price that may be charged by retailers.
Reverse engineering	See generally, 'Decompilation'.
Rule of reason	Under this doctrine, alleged anticompetitive conduct is not automatically forbidden or permitted in *per se*. An analysis of the competitive effect is done within the economic context in which it occurs before the court decides whether to condemn the practice or allow it to continue.
Secondary Market	The secondary market is at a level once removed from the primary market. In the secondary market, networks compete among themselves to provide network services.
Short run	A time period so brief that some factors of production cannot be costlessly varied.
SME	Small and medium enterprises
Software systems	System software comprises operating systems and utilities. Operating systems are sets of programs that regulate the functionality of a computer program by linking the central processing unit to computer peripherals, such as storage devices like RAM and ROM, monitors, printers and input/output devices such as keyboards and optical scanners. Operating systems translate programs developed in binary digit sequences of coded instructions into program languages. They interface users and machines capabilities.
Standards	Standards describe sets of product characteristics and are used to communicate information about products and guide or control the production of products.
Standardisation	The basic aim of standardisation is to ensure interoperability

	between related technologies.
Static Efficiency	Competition takes place in the market, with firms competing to provide the lowest prices and best features. With many firms and few barriers to entry, competition minimises costs to consumers and eliminates the ability of a firm to earn supernormal profits. Thus, competition assures prices equal the marginal cost of production.
Software Packages	Software packages include programs that are developed to execute cross industry tasks. They included system software, programming languages, applications tools and application solutions.
Switching Costs	Costs incurred by users when they switch from their existing platform to another one. This could manifest in terms of the time taken to learn how to use the new platform, the loss in interoperability with applications compatible with the old platform, or interoperability with users of the old platform.
Tipping	A point where the joint existence of two incompatible products becomes unstable and a single product standard will dominate.
Undertakings	Economic entities, usually firms or a group of firms.
Upstream Firms	Firms that supply the inputs in the production process.
Utilities	Utilities are programs managed by the operating system that are used for the maintenance and safety of programs, the conversion of programs from one language to another, and the organisation of information. They comprise compilers, assemblers, translators, sort/merge programs, screen generators and communication monitors. Internet software browsers such as Netscape's Navigator and Microsoft's Explorer have been introduced to extend the functions of traditional utilities.
Vertical Integration	A strategy where the firm performs internally an economic function that it could have contracted out.